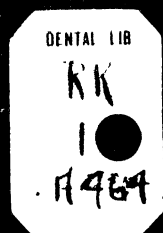
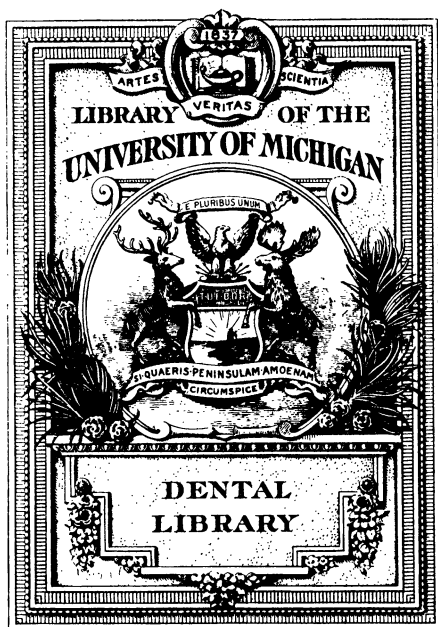
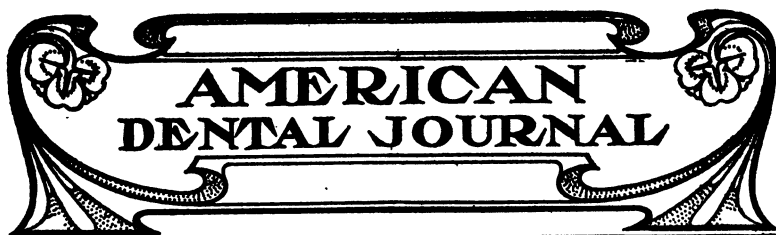


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Listerine Tooth Powder

Tooth powders have long been empirically employed, chiefly as a mechanical agent for cleansing the teeth, and with little regard to their composition or chemical action. Many of the articles sold for this purpose contain ingredients prone to fermentative action in the mouth, such as orris root, starch, sugar, etc., and, in addition, pumice stone, cuttlefish bone, or other harmfully abrasive substances.

Listerine Tooth Powder, possessing neither of these objectionable qualities, very acceptably meets all the requirements of a frictionary dentifrice, and promises to give much satisfaction to those who employ it, in conjunction with a mouth-wash of Listerine, suitably diluted.

To dental practitioners of record, the manufacturers will be pleased to send a supply of samples of Listerine Tooth Powder for distribution to patients.

Lambert Pharmacal Co.
Saint Louis

OUR POST GRADUATE COURSE

OPERATIVE DENTISTRY.

BY R. B. TULLER, D. D. S.

ORAL HYGIENE.

Cleaning teeth takes on a greater and more important significance than heretofore in the so-called new school of dental practice termed prophylaxis, or oral hygiene, and it is a good thought and effort, no matter how well one operated before; for one cannot become too expert in this direction, or know how too well.

In the first place the operators in this particular school of practice provide themselves with scientifically made instruments, designed to reach every surface of any and every tooth in the mouth, roots included; and also accomplish what it is desired to accomplish in removing from the tooth any sort of calcarious or other deposits. The principle of these instruments is, that from the angle of the blade and position of its cutting edge, they operate as well controlled cutting planes instead of the usual scrapers that do not follow the curve of the tooth surface. Of course, too, an intimate acquaintance must be gained as to instrument selection, and the technique of its efficient use; for there are in some sets no less than 150 separate and distinct forms and sizes. If these were not kept in a regular prescribed order and each one returned to its place after use, it would soon result in confusion and perplexity as to whether the correct one was selected or not for the particular surface in hand. Each instrument is numbered, and its place in the case provided, has the corresponding number. The position in the case also indicates a right or left instrument, and again, the locality of certain shapes with a system of gradual and progressive variations of curves and angles so that one familiar with them and their use can with little hesitation pick out the one desired, when they are kept in order.

System, too, must be followed in operating, so that no place may be left untouched. There is a place to begin on each tooth and a course to follow. When all that can be is done with one instrument,

its number indicates the next one to take up to continue where the first left off and on to where a change must again be made; and so on until every surface has been gone over.

Usually and logically this kind of work must be done on a time basis as to the matter of remuneration,—so much per hour, and engagements are made mostly for only one hour at a time; and it is not unusual to consume the hour on one tooth, and in some instances more. And it is altogether a different proposition from a “tooth shine” for a dollar, which seems to have been quite a prevalent idea throughout the country in the past. A dentist who charged two dollars for cleaning a set of teeth was liable to be rated as a robber.

There are today dentists in Chicago and other cities, who have an established rate of not less than \$25.00 an hour; and more in especially bad and neglected cases. This refers to so-called cleaning in treatment for pyorrhoëa alveolaris.

It is an established fact, long ago, that no cure was possible in these cases where all deposit was not completely removed, and to do this with certainty takes peculiar skill and time, whatever the system of scaling employed, old or new. With these improved and scientific scalers or planes, the movement is to sweep the cutting edge around the tooth or root instead of an up and down movement along the axis of the root. One who has used these instruments can realize the greater certainty of cleaning the surface, and of *every* surface better than by the older methods; though it is not denied that careful painstaking operators may succeed satisfactorily with older methods. It was the success that followed the thorough and painstaking operator of old with instruments not always well adapted as well to the work, that led to devising of a scientific series or set of instruments.

It is the rule with these later school operators to not leave a tooth until it is finished. Without an adequate system to be closely followed, one is quite apt to move from one tooth to another, doing a little on each as may be convenient before taking up another shape of instrument. Some surfaces may be more easily overlooked by this skipping about method of working.

After the instrumentation, comes the polishing, and this needs unusual care and skill. The engine may be used on some of the exposed surfaces, and is desirable on account of rapidity; but all these cleaned roots must be polished, and it must be done by hand with a suitable

port polisher and wood points and polishing powder. And after this the debris must be flushed out of pockets and from between teeth and other places of lodgment. An antiseptic wash may follow this; or in pyorrhea pockets several different remedies have found favor. Some flood the pockets with lactic acid; some put their faith in pheno-sulphonic acid, and some prefer some preparation of iodine. Both of the above acid preparations are supposed to act in some measure as a solvent of any particles of deposit as well as having a healthful stimulating action on the disturbed alveolous and the softer tissues. The iodine preparation seems to be a splendid treatment for diseased and tumid gums at most any time. The author has used with great satisfaction, equal parts of tincture iodine, tincture aconite and chloroform. This will be recognized by many as an old counterirritant to be applied on the outside of the gums; but each of the ingredients have properties quite as valuable for application around the roots of teeth when needed. It must be remembered, however, that aconite taken into the system is a poison, and for that reason great care should be taken in the application of this remedy, both to avoid any being accidentally conducted to the stomach in saliva or lavishly brought in contact with the mucus membrane which might in persons particularly sensitive to it, produce symptoms of poisonous action. The first symptoms to be noted are enlargement of the pupils of the eyes. The antidotes are tannic acid; green tea; bromine, chlorine and *iodine*. As the iodine itself which is mixed with the above formula is an antidote, there is not much danger of trouble in its use as indicated. But in using a dangerous drug of any kind it is always well to know something of its characteristics, and the antidotes. The author has used it pretty freely for many years and with never one unpleasant or suspicious symptom. However, in its free use, it would be well to have the patient rinse the mouth well, and take note of the pupils of the eye; and the dentist should never prescribe it for the patient's own use.

Cleaning the teeth preliminary to treatment of pyorrhea is more a part of special prophylactic effort today than preventing decay; but it is a well known aphorism that clean teeth cannot decay; hence the benefit is broadly preventive.

Miller has shown us that decay occurs through influence of bacteria held in contact by a gelatinous film or plaque, and a lactic

acid produced under it attacks the tooth structure. These plaques form where it is not easy to keep the tooth clean and where they are not disturbed by the excursions of food, and are not discernable, ordinarily, to the naked eye. Their location, however, may be made visible by using iodine as a stain, and then the operator may polish off the stain and be more certain of the efficiency of his cleansing effort.

However, prophylactic cleaning is supposed to go over every surface of a tooth so systematically and thoroughly that no plaques or any foreign matter remains. Then, under the dentist's instructions, the patient is supposed to faithfully do his or her part to keep them clean until it is time for the dentist to repeat his more thorough work.

It is well understood that dentists with a busy general practice cannot give up the time to this thorough conscientious cleaning without adequate compensation for the time that must be spent, to say nothing of the exquisite skill required to approach anything like perfection in this work.

So, then, it resolves itself into a question between the patient and dentist, as to what shall be undertaken and the remuneration expected, and which would better be settled between them before than after the work. And payments should be made as the work progresses or at each visit. People will sometimes tacitly enter into a contract like this with the dentist, and then be thoughtless and neglectful of their part; and then not getting good results in consequence, are very apt indeed to not want to pay cheerfully when settlement is left to the end. When they have money invested in the case they are much more apt to keep interested and faithful.

Our Foreign Department

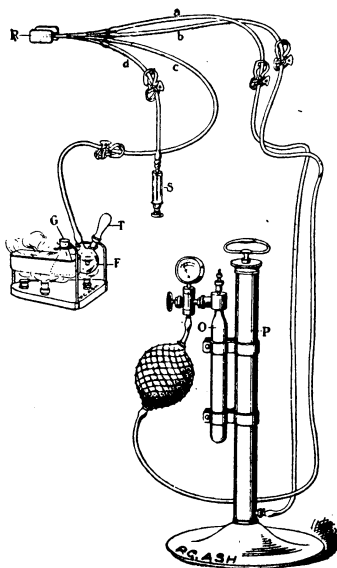
THOMAS L. LARSENEUR, D. D. S., Foreign Department Editor

TREATMENT OF CARIES OF THE FOURTH DEGREE BY THE "ASPIRATOR METHOD."

BY M. AND MRS. FILDERMAN.

(*L'Odontologie*, Paris, October 15th, 1909.)

We have already exposed in other dental journals the reasons which have led us to try and use the aspirator method in caries of



the fourth degree, in other words, in deep caries where devitalization of the pulp was necessary.

In this article we propose to limit ourselves in giving a descrip-

tion and the manner in which the instrument is used in connection with this new method of treatment. We also propose to give the statistics of a few cases which we have had under observation.

The figure below will dispense us from going into too many details. The small apparatus R, which is nothing else but a U tube which has at its convexity a small piece of tubing which is soldered to it; this little tube is intended to be used into the pulp-chamber. Of the two branches of the U, one is connected by a rubber tube to a powerful aspirator pump P, the other branch is divided into three branches with the following courses: the first to be an oxygen bag O, the second to the formol flask F, and the third to a syringe S, which is filled with paraffine and "*gomenol*."

We have kept on record the time required for most of our treatments, which averages in most cases for one treatment from six to fifteen minutes. This of course does not include the preparation of the cavity, which is effected in the usual manner.

This operation is not very complicated; it takes longer to describe it than to execute: Adapt the three rubber tubes a, b, c, to the pump to the oxygen bag and to the formol flask; the syringe having been previously boiled with its tube.

The cavity is prepared as for any ordinary filling, a little stents composition surrounds the dental extremity of the filler, and the two wings which prevents the stents from being blown away, ensure the working of the filler which is placed on the tooth to be treated, taking care that the extremity of the tube is placed into the cavity. The teat is watched, and serves as a recorder during every moment.

The patient is now requested to bite, shut the clips of the oxygen cylinder and of the paraffin supply. Open the other clips and draw the pump once: the teat T becomes flattened. If the pump is drawn three or four times this will cause enough vacuum to remove most of the septic products, gases and the fluids which it may contain.

Open the oxygen tap for a minute, shut it again, open the clip which slides upon the oxygen tube for a moment, and then shut it again. The aspiration is again repeated so as to remove out of the tooth the oxygen and the particles which may be in the cavity.

During this operation, which usually does not last more than a few minutes, the paraffin and formol are heated. Open the formal

bulb; the rarefaction of the air in the tooth determines an appeal to the formol vapors; the teat F becomes flattened, which proves that the *stanching of the cavity and canals is complete and perfect*. Three or four strokes of the pump P will be sufficient to free the tooth from almost all the debris, fluids and gases which it may contain. Other vapors will be produced, which will fill the void and finally swell out the teat. A strong pressure will cause the formol vapors to penetrate to the ramifications of the cavity which is disinfected, which is undoubtedly due to the heat as to the formol. Blow out the formol flame and shut the formol clip.

Perform a final aspiration; fill the syringe with paraffin, and push the piston energetically after having opened the clip. The paraffin gomenol, which is an antiseptic and sedative, will fill completely the roots and all their ramifications. It is at that moment warm and fluid, but it solidifies at 42 deg. C. and rapidly becomes hard in the roots.

Now the instrument may be withdrawn and the cavity permanently filled. More than 100 cases have been completed with one treatment, using this process. Most of these cases were children taken from the hospital, who were under the care of M. Galippe, who authorized us to use our "Method of Aspiration" in preference to all other method of treatment in cases of caries with mortification of the pulp.

About two-thirds of these cases have been under observation and of this amount only two have proved unsuccessful, caused by cotton which had been, through neglect, forgotten in the root canals.

Under these conditions, we believe that our experience, which lasts for at least a year and a half, is a sufficient proof, to ascertain that the "Method of Aspiration" cures caries of the fourth degree in one treatment.

A NEW METHOD OF ANESTHETIZING THE DENTAL PULP.

BY DR. A. VANMOSUENCK.

(La Revue Trimestrielle Belge de Stomatologie.)

The method advocated by the author consists in employing a solution of Icentigramme of cocaine together with one drop of hydrochlorate of adrenalin in one cc. of distilled water. This weak solution has been almost always found to be efficacious, and involves none of the inconveniences, syncopes, etc., connected with the use of cocaine. Since considerable pressure is to be exerted, a solid tight syringe is required.

The place of the injection is the inter-dental space, where the needle can be most easily introduced nearest to the apex. The needle glides along the root as far as possible, until it is lodged between the two osseous planes and considerable resistance to the injection of the liquid is felt. On account of the limited space into which the liquid must penetrate, the injection is made very slowly. Its successful penetration is indicated by the appearance of a whitish zone at the level of the interdental space.

A few minutes after the injection, anesthesia is complete and generally lasts over fifteen minutes, which gives the operator time to painlessly remove the pulp.

For sensitive dentine in superficial cavities, in the region of the cervical edge the author recommends erythrophlien, mixed with equal parts of eugenol; this is inserted into the cavity, which has been previously dehydrated, on a minute piece of cotton, and sealed in with gutta-percha or cement. The cotton is left in the cavity for twenty-four hours to forty-eight hours. The drug possesses a very intense vaso-constrictor action upon the vessels of the pulp, which produces total anemia and subsequent anesthesia of the pulp.

While realizing the dangers involved in the application of cocaine in the proximity of the pulp, which might produce an acute pulpitis, the author recommends the above method in caries of the third degree. Only in persons of about 40 years of age, in whom the teeth are short and very firmly implanted, the pulp was found to retain its vitality after the injection.

The hemorrhage following the extraction of the pulp is stopped by firmly packing in the root-canal a cotton fibre, which if necessary may be saturated with trichloroacetic acid.

AN UNCOMMON METHOD OF SEPTIC INFECTION.

The following remarkable case illustrates the fact that dentists should invariably be most careful in the disinfection of their instruments, preferably by boiling. It also furnishes an excellent example of the unexpected ways in which a chancre may be caused, and may serve to emphasize the contention that mechanics should at once cease their highly reprehensible practice of placing trimmed-off wax in the mouth, often immediately after the wax-up denture is returned to the workroom, after having been tried in the patient's mouth.

A full description of the case will be found in the "*Bulletin du Syndicat des Chirurgiens Dentistes de France*." Following is in a few words the contents of the case:—A medical man was consulted by a youth 12 years of age, who complained of a swelling of his nose. The first impression was that the lesion was an abscess, but later it turned out to be an undoubted hard chancre of the naso-labial sulcus with surrounding induration. Upon careful enquiry it was ascertained that the lad was a mechanical apprentice to a dentist. He had acquired the deplorable habit, said to be common to other mechanics, of finishing off the polish on his instruments by rubbing them upon the side of his nose. By an unlucky chance one of the dentist's patients was actively syphilitic. Simple contact with the patient's buccal mucosa and secretions when the secondary eruption was fully out had infected the tools, and one of these had in turn led to transmission of the infection to the unlucky lad.

ON 625 INJECTIONS FOR LOCAL ANESTHESIA.

BY DR. MAURICE PÔLET, OF BRUSSELS.

(*Archives de Stomatologie*, May 1909.)

When I was admitted a member of the *Société Belge de Stomatologie* I decided, for the following reasons, to make some statistical investigations regarding extra- and intra-dental injections. The reputation and the responsibility of the operator on the one

hand and on the other the freedom from pain, to which the patient is entitled, render the choice of an anesthetic a very important matter, specially in cases of pulpectomy and extraction. The subject has also given rise to much heated controversy in some quarters, and has always excited great attention in this Society. Further, an excessive fear of cocaine has induced a number of colleagues to institute a search among the newer remedies, but without obtaining the desired results. Finally, there is the discovery of alyoin and novocaine, which have been praised so much, and the possibility of increasing the effect of these anesthetics, and at the same time ensuring a bloodless operation by the addition of adrenalin.

When I began my investigations, my confidence in cocaine was as it still is, unlimited; on an other hand, I had none whatever in alypin. At the dental clinic of Louvain, where Professor van Mosuencq initiated some of us into our specialty, cocaine injections were the rule, and there were practically no accidents. One day, we tried some samples of alypin and we had among other things, a serious accident, which Professor Mosuencq reported to you about two years ago; the patient had two alarming attacks of syncope following the alyoin injections.

However, I took up alypin again, when several colleagues, among them Dr. Laporta of Lierre, began to employ alypin without any accidents and with good results; and Dr. Gorin of Brussels, injected as much as 8 cc. of alypin for thyroid-ectomies, and found it better than cocaine. In order to test it fully I gave 315 injections.

Almost all the tissues of the tooth and the jaw can act as recipients for the anesthetic, so that we have six ways of directing the anesthetic towards the nerve fibres, viz., the dentine, the dental nerve, the gum, the periosteum, the bone, and the nerve trunks themselves. Injection into the dentine is difficult and uncertain. The method, which aims at reaching the nerve trunks themselves, especially the inferior dental nerve, is difficult and not uniform in its results. My injections were made into the bone, the pulp, the periosteum, or the gum.

Although it would be at least as interesting for us to begin with the consideration of preliminary anesthesia for pulpectomy, I must first deal with my experiments with regard to extractions, and give

you the results of 576 injections. Later on I shall discuss fifty injections into the pulp.

Of the numerous anesthetics at my disposal, I chose among the well-known ones, cocaine, alypin, stovaine, and novocaine; and among the little known ones tropacocaine, eucaine *B*, acoin, anesthesin, nirvanin, and adrenalin. In fifty cases I also injected a mixture of equal parts of cocaine, alypin and stovaine.

As a rule my injection was made or composed of one drop of adrenalin 1-1000, for 2 cc. of the anesthetic, and 2 gm. of water. I injected the gum on each side of the tooth and gave two injections between the tooth to be extracted and the two neighboring ones, as deeply as possible, and more intra-periosteal than intra-gingival. I made notes of the age, sex, tooth, diagnosis, quantity of anesthetic, adrenalin and water injected, the time between the injection and the extraction, the pain, the hemorrhage, and whether the injection was given hot or cold, and finally, any observations. In estimating the pain and hemorrhage I used the terms "none," "very slight," "moderate," "severe."

For the purpose of comparing results under more or less equal conditions, and so perhaps finding a point in favor of one or other remedy, I divided extractions into four groups: (1) roots, (2) teeth, the subject of pyorrhea, (3) of periostitis, (4) the second, third and fourth degrees of caries.

One hundred and seventy-seven of the three hundred and fifteen injections of alypin produced complete anesthesia, *i. e.* 58 per cent. If we add to these seventy cases of very slight pain, we get 80 per cent.

Seventy-seven of 134 injections of cocaine produced complete anesthesia, *i. e.* 50 per cent, and if we add thirty-five instances of very light pain, we get 77 per cent.

Twenty-six injections of stovaine gave respectively 33 and 50 per cent.

Fifty injections of a mixture of alypin, cocaine and stovaine gave 61 and 88 per cent.

Eleven injections of novocain gave 20 and 35 per cent.

Nine injections of tropacocaine gave 0 and 33 per cent.

Six injections of eucaine *B* gave much the same result.

Acoin was worse still, and the injections of nirvanin and anesthesin were painful and useless.

Five injections of a saline injection of adrenalin gave rise to slight pain in each case.

One injection of water given by mistake in a person in whom a cocaine injection for a similar tooth had produced total anesthesia gave a like result, except that the injection was slightly painful.

Six intradiploic injections enabled me to perform four painless extractions and two with slight pain. In five of these cocaine was administered, and alypin in the sixth. Perhaps I may be permitted to read the notes of my second intradiploic injection: Boy, age 13½, 1st M. U. L., inflamed pulp, solution of 2 cc. alypin, a drop of adrenalin, 2 cc. of water. One or two drops injected into the gum between the bicuspid and molar. Drill introduced obliquely upwards and inwards through the external layer of bone. The injection penetrated in ten seconds, without pain and without loss. Interval of five minutes. After this I found the gum insensitive to a prick on the outer side from the third M. U. L. to the left central incisor, whereas on the inner side it was only insensitive as far as the two bicuspid. The patient noticed the anesthesia as far as the right canine. He felt occlusion, pressure, and percussion much less on the left side than on the right. During the extraction there was some slight pain, chiefly on the inner side; the hemorrhage was very slight. The operation lasted ten minutes.

In classifying the extractions into four groups, it is necessary to bear in mind that an injection may be a comparative success in periostitis (especially with adrenalin) and much better in the case of an intact tooth, and best of all in the case of roots.

Cocaine seemed to give the best results in the second, third, and fourth degrees of caries; alyoin seemed the best for roots. The mixture of alypin, cocaine, and stovaine succeeded very well in periostitis. Needless to say, thousands of injections are necessary to study these details and confirm the results.

A point of great interest is the addition of adrenalin. Dr. Roy advises the addition of two to four drops of adrenalin, 1:1,000 to 1 cc., and after that only half as much.

If we place those cases together in which the *pain was nil*, or very slight, injections without adrenalin compare as follows with those given with adrenalin:

	Without Adrenalin. Per cent.	With Adrenalin. Per cent.	Difference. Per cent.
• Alypin	76	91	15
Cocaine	58	81	23
Stovaine	40	52	12
Novocaine	27	32	5
Tropacocaine	27	32	5
Eucaïne	27	32	5

The addition of adrenalin therefore improves the anesthetic power of cocaine and alypin by 19 per cent, *i. e.* from 67 to 86 per cent, almost a third. Adrenalin diminishes the hemorrhage. The latter is *nil*, or very slight, in 70 per cent of the cases with alypin, in 80 per cent with cocaine, which has in itself a vaso-constricting effect, in 83 per cent, with a mixture of cocaine, alypin and stovaine, and in 60 per cent, with stovaine.

One would expect that adrenalin would have some effect in periostitis; it diminishes the size of the arterioles and hinders the escape of the anesthetic into the general circulation. The cases of periostitis treated without adrenalin were painless, or almost so in 50 per cent of the cases; if treated with adrenalin, in 63 per cent; and if treated with adrenalin and cocaine, in 68 per cent; if with a mixture of cocaine, stovaine, and alypin, in 83 per cent; and if with alypin in 63 per cent.

It is advisable to give the injection warm, and to use a 7 per cent saline solution.

The time required for anesthesia to take place seems to be about five minutes after the injection.

I saw two cases of syncope and thirteen cases of threatened syncope. Cocaine caused syncope twice and threatened syncope in four instances. The first case of syncope came on three hours after an injection of 1.5 cc. Syncope was threatened by alypin, once; by the mixture, once; by eucaïne, once, and by novocaine, twice. The other cases were the result of the prick of the needle.

The quantity necessary for an injection varies according to the tooth. I can obtain complete anesthesia with .5 cc. of alypin. The average dose is 1 to 1.5 cc. The addition of adrenalin reduces the amount of anesthetic necessary. The relations obtained between the

pain and the hemorrhage are constant, and this proves that the adrenalin acting on the arterioles and the axis cylinders, reinforces the action of the anesthetic. As adrenalin retards the entrance of the drug into the general circulation, it reduces the cases of threatened syncope—in other words, it ensures a very good anesthesia.

I now give you the results of fifty intrapulpal injections, which were produced either by compression or cocaine-adrenalin injections.

The pulpectomies were quite painless.

Two cases presented some difficulty.

In four cases pain lasting two to twelve hours followed the operation.

In six cases the nerve was killed and the tooth filled with "Trio" paste at the same sitting. In one of them the tooth had been painful to pressure for two days.

I once tried alypin for an intrapulpal injection, but the hemorrhage was so great that I gave it up.

I hope to be able to give some further statistics in a year or two, when I have a larger number of cases. In all events, it seems to me that alypin is less dangerous and more efficient than cocain, and adrenalin is certainly a useful and necessary adjuvant.

HOW TO REPAIR FACING WITHOUT REMOVING BRIDGE.

BY DR. MAX ORDOVER.

(*Zahntechnische Reform*, June 5, 1909.)

The pins of the fractured facing are removed, and in their place two holes are drilled to correspond to the pins of the new facing. These holes are given a funnel-shape lingually, the new facing is then selected and fitted to place and the pins are slightly shortened with a small stone in order to roughen their ends also.

Then the facing is held firmly with the finger and Ash's burnisher No. 208 is used on the roughened ends of the pins, till the pin has become flat and completely filled the funnel-shape holes. This operation is performed on both pins. Then Ash's burnishers Nos. 224 and 225 are used in order to give a pin-head shape to the pins of the facing. The tooth is then as solid and firm as if it were soldered.—(*Le Laboratoire at le Progrès Dentaire Réunis*.)

ORIGINAL CONTRIBUTIONS

TOOTHsome TOPICS.

BY R. B. TULLER.

B'gosh!

What d'ye think?

I got a boy what wants to go an' study the dentist trade.

An' after all these 20 years which I've ben tryin' to make a good farmer of him!

Yep, he wants ter go an' study how to make peepul yelp an' screech an' holler—an' git money fer doin' it. I've told him how I c'd make 'em howl 'thout goin' away to lern; but he didn't 'pear to like the demonstration I made on him, though it was very successful from the way he done a barn dance and yowled.

But he'll never make a farmer, an' so his ma she sez: "What's the uste. He allus did ack as if he wuz born for some lazy occupation."

Now, me, I'm farmer all through, an' I believe in bein' right up an' doin things. I git up every mornin' long afore the sun an' milk 14 cows whilst my five boys is a doin' the other chores.

But I aim to set a pace for them boys an' lern 'em my motter, which is, "Whatever y' have to do, go to it; spit on yer han's an' pitch in." Now Sile is the only one out the five that has a dentist streek in him—an' he's named after me at that.

What put the dentist idea in his head, was goin' down to the village one day an' havin' a tooth yankt. It warnt the yankin' that looked good to him pussonally; it was the way the dentist ernt half a dollar in less'n nine seconds. As Sile set there a spittin' out the blood, he jest sized it up that a feller could make more in yankin' teeth than working on a farm, an' easier. Huh!

'Course, some days he wouldn't pull more'n two or three, but other days he mite pull twenty; an' of course, there's some other things doin'. If peepul have teeth out they also has to have some in.

He observed that the dentist had a nice comfortable place to be in in all kinds of weather, an' he shure thought he could make better n' \$25.00 a month an' board.

Then a woman come in an made a 'pintment to have some teeth filled next day, an' talked about havin' three or four gold teeth, an' he seen the dentist c'd work them things all in between pullin'.

An' she hadn't ben gone long 'fore a nuther one come in, an she ast the dentist what he thot it would cost her to fill three holes with gold an' put on a bone tooth. An' he sed, "Well, if you will come rite away an' fill in a broken 'pintment what I got, I can give you cut rates. I allus git \$5.00 dollars for crowns, but fer you, if you cum this afternoon, I will make one fer \$4.89; an' fillin' I get one an' two dollers fer, I'll put in at ten per cent off."

He figgered he could do all that in one p. m.; and so Sile figgered he'd do putty nigh eight or ten dollars in a half day—an' maybe pull a tooth or two besides. Sile sez a dentist can do more in a day with one hand tied behind him than enny farm hand could do in a month.

Then, too, he saw the dentist goin' about in the street later an' he had a silk plug on his head, an' fancy silk stockins on his ankles, an' cuffs on his pants; an he walked as tho he owned half the town. An' when he went in an' bot some sody water an' a segar, he pulled out a roll of money as big round as a cow's leg, to pay out of.

Well, Sile had ben restless for some time, an' that jest set him all on ege. Here wuz a way to git ritch quick, an' he wuz agoin' after it for hiz'n; an' he ain't since ben no good on the farm.

An so Ma tho't we'd better let him go. But, gee whiz, when we come to size things up, it wuz agoin' to take three years and cost \$300.00 an' more to the collige alone, say nothin' about board an' other expenses in Chicago.

I kickt out on that, you bet. It hadn't otter take no feller more'n six months to lern the hull blame bizness. But them professors an' teachers in Chicago, they wanter git ritch quick and keep it a comin', an' so they go to work and string the thing out for three years; an' then say we better git in 'fore they make it four.

I went down to see Doc Kibosh to see if he couldn't lern him cheaper. But he sed he could lern him easy all he need to know fer \$300.00—live to home an' no board to pay—ony them fellers

runnin' schools had got a law past which prevented a feller practicin' unless he got one of their dope-plomas.

Then I thought we might get a second hand dopeploma fer a lot less money; but them durn fellers has got everything hedged up. A feller can't buy no dopeploma at enny price—not a genuine one. Come purty near givin' \$100.00 for one fixt up; but another young feller told Sile it wuz no good; that he couldn't register with it, and the law'd hop on him if he didn't register.

Well, we wuz up agin' it, an' I had 'bout made up my mind that Sile would have to stay home an' get down to farm work like the rest of the boys, when Sile had a confab with his aunt Polly, who got \$5,000 life insurance when her husband died lately, an' she 'greed to let him have the money; being sure he cu'd pay it back in no time after he got to ernin'.

An' so Sile is agoin' to lern the dentist trade, an' to make peepul yell an' holler an' git paid fer doin' it. Well, I hope it will all be as rosy as he sees it; but by gum! if nobody paid a dentist enny more'n me an' ma has in our lives I gess they'd be a lot of 'em would have to go to work fer a livin'.

Well, since the thing is all fixt up, I felt it my duty as his dad to give some good advice; an' so I sez, sez I: "Silas, you're a goin' away fr'm the parental roof an' you think you are agoin' to lern to git ritch quick. I hope you do, an' that you don't fergit the old folks at home. But whatever you undertake to do in this life, I figger that my motter is jist as good in one thing as anuther, and let me repeat it to you, sonny, an' let it sink in good an' deep. Whatever you do, do it. You're goin' to be a dentist. All right, be one. But don't go a struttin' 'round haf yer time, like Doc Kibosh does, fritterin' away nickels on sody water an' segars an' movin' picters; but work to get peeples to patternize ye; an' when yew git 'em remember yer dad's motter which has allus workt good—"Spit on yer han's an' pitch in."

ABSTRACTS AND SELECTIONS.

CAST GOLD INLAYS.

BY C. A. MURRAY, MONCTON, N. B.

I desire to call your attention for a short time to a description of the above subject and then follow the same by a practical demonstration. If my description is followed closely you can compare it to that of your own method, and if I succeed in giving you any new ideas I shall be very glad. I think the method of interchanging ideas at our dental meetings is productive of a great deal of good and that we should endeavor to do more in the future than we have in the past, and I am sure our meetings will be more of a success.

Where Indicated.—In buccal cavities of bicuspid and molars. In compound cavities in occlusal approximal surfaces of molars and bicuspid, on mesio-occlusal-distal surfaces of bicuspid and molars and other shallow cavities.

Advantages.—Easier on patient, shortens the sitting, easier on operator, a more dense filling, almost perfect adaptation, under gingival margins, and the other advantages of a cohesive gold filling.

Cavity preparation (in general).—Thick walls, definite outline. Cut out fissures and extend enamel walls so that the junction of the filling with the enamel margins will be in an immune area. Always have a flat seat.

Bevel the enamel margins longer than for cohesive gold. Have no undercuts and make the cavity as near "box like" as possible.

Making Matrix Impression. Using Wax specially Prepared.—It is better to soften the wax in water heated to just below boiling and work the softened wax (between well-scrubbed fingers) until the mass is soft throughout. Now with a pellet of cotton touch the cavity with sweet or olive oil (common lubricating oil will do). Now force the softened wax into every part of the cavity. Press in well. Play a stream of cold H_2O on wax to harden.

With sharp instruments shape the wax to the desired form. Burnish wax to margins with proper shaped burnishers. Now with a pellet of cotton dipped in oil (as above) rub over wax. Re-burnish and smooth the pattern.

Note.—It is preferable to use a superabundance of wax to start with, as if wax is added it is liable to break away when the pattern is being removed.

After shaping the wax play a stream of cold water on it, then remove.

To Remove Patterns (two ways).—(1) Draw with a sprue wire. (2) Tease out of cavity. In either case place in ice water to harden wax.

Investing Pattern.—It is necessary to have the wax on the end of a piece of wire to act as a gate for the expulsion of the wax from the investment and the entrance of the gold. Therefore, if the pattern has been removed by the teasing method, the gate wire must be heated and lightly pressed into the wax. (The investment material sold by S. S. W. is preferable.) A perfectly clean plaster bowl and spatula are necessary. About two teaspoonfuls of water will be sufficient to place in bowl.

Now dust in the investment compound, little by little, until the water will "take up" no more. Do not stir, but turn the bowl on its side and revolve it until all air is expelled and the mix is free from lumps or bubbles. The mix should be of the consistency of thick cream.

With a hair brush place a small amount of the mix on the wax and carefully draw it toward the margins. Cover the wax. The ring or flask is placed on a glass slab and the mix placed in it from the right side until it is full.

(This is done so that the mix will not enclose air. It being added from the side will displace the air and occupy the space.)

The covered wax pattern is now inverted and pressed gently into the flask in the exact centre. The flask is tapped on the side and the pattern allowed to gently settle, and the investment will settle around it.

Have the pattern in the middle of the flask "every way."

Allow investment to harden at least one hour.

When hard carve a cup-shaped depression from the side of the

flask to the gate wire (to hold the gold while heating). Now hold wire side down over a burner, until wire becomes heated and will fall out or can be gently extracted along with any debris of plaster. Thus preventing stopping of the passage.

The flask is then placed over a small flame to heat.

While this is heating prepare your gold by melting in a well-boraxed crucible and dropping into either sulphuric or hydrochloric acid to clean.

Also prepare the mouldine in the S. S. W. swedger or caster. To do this wet the mouldine and press the reverse end of the plunger into it. Now place the plunger in its proper position and press the handle of a Kingsley scraper in to make a deep vacuum.

To Cast Inlay.—Heat the flask well with a blowpipe until a flame will be seen coming from the gate hole; this indicates that the wax is burned out. Now remove the flask and place on the base of the caster and place the button of pure gold in the cup-shaped depression; heat with blowpipe to white heat and above, until the gold is jelly-like and trembles, as it were. When it comes to this state quickly place top in position and gently but quickly press on plunger. Steam will be generated and great pressure result, which will force the gold into the impression through the gate hole.

If the cast has been successful the gold surplus button will be round or spherical in shape. If unsuccessful, it will in most cases have a flattened appearance.

Many different forces are brought into play in casting fillings, and many different instruments used.

That which I have described has suggested itself to me, after having had experience with compressed air apparatus and extensive appliances as the most accurate and simple method for small pieces.

—*Dominion Dental Journal.*

CAUSES OF FAILURE OF AMALGAM FILLINGS.

BY CHAS. E. SALE, GODERICH, ONT.

The causes of failure of amalgam fillings are many and varied, some resting with the manufacturer of our alloys and many resting with the dentist. The composition of the alloy must be right, and the manipulative technique of insertion proper before perfect results can be obtained. When such is the case, amalgam will attain a much higher place in dentistry.

Many of our present amalgams are not homogeneous, that is, the crystallization of the different metals is not uniform, and a perfect solution of the fillings in mercury is not always obtained; hence, the amalgam cannot be a true amalgam.

Sometimes liquation takes place in the cooling of an alloy, when the metals will separate into several alloys of different composition. The alloys with the higher fusing point solidify first. This produces great variation both in the composition and properties of an alloy.

At the same time, owing to specific gravity, the lightest alloys, if solidified last, may be uppermost.

So, too, the use of other than chemically pure metals causes great variation in an alloy.

Undoubtedly all these phenomena cause failures which are traced back to the manufacturer, but the manipulative technique of insertion is responsible for far many more.

The use of too much mercury causes an excess of expansion if it be an alloy which expands, and similarly causes an excess of shrinkage, if it be one that shrinks. When an alloy expands slightly with a given amount of mercury, then with a little more, a little more of the alloy is dissolved, and more expansion follows, as has been proven by experiments.

Then again if an alloy is shrinking, and a little more mercury is added, more shrinkage follows, as has also been ascertained by tests.

Hence we see the stability of the amalgam materially affected by an excess of mercury. Therefore it behooves us to use just the right amount of mercury and not leave an excess in the filling.

To put the alloy in solution more mercury is required than we dare leave, and, by not removing this excess from the amalgam before inserting the filling, we find it deficient both in strength and stability.

Too often alloys are mixed with such an excess of mercury that they become sloppy and smeary. Fillings compounded from such mixes should never be inserted, for such a filling has neither stability nor strength and faulty margins and low resistance to crushing force cause many failures.

Too much mercury affects the composition of an amalgam by removing constituents most easily dissolved in mercury, as tin and zinc, both of which are needed for their respective qualities.

In summing up the effects of too much mercury on an alloy, we see that it affects the stability, the composition and the strength, so we need have no hesitancy in saying that the excess of mercury in amalgam fillings is largely responsible for the failures.

The use of too little mercury in mixing amalgam gives a filling a crushing resistance of about one-fourth of what when the proper proportions are used. The filling is crumbly and granular. So, also, too little mercury causes failures; but rarely do we find too little mercury causing the failure, but invariably too much mercury.

Alloys which, when put on the market in a well-nigh perfect condition, are, in the course of a year, a year and a half or two years, so annealed by standing that their resistance to crushing force is lessened by one-half. Therefore, as alloys get weaker with age, they should be used fresh, or at least less than one year from the date of manufacture. Many dentists buy enough at one time to last from one to two years, and faulty fillings occur from this source. Also an alloy which, when new, requires seven parts of mercury to five parts of alloy, will, at the end of a year, be put into solution with six parts of mercury to every five parts of alloy. Often this extra one part of mercury is left in the filling, and all the disadvantages of too much mercury is experienced.

Incomplete mixing of an alloy causes many failures, for in this way less movement takes place outside of the mouth and more after the filling is inserted. To get the maximum amount of movement outside the mouth and the minimum amount after the filling has been inserted, the alloy and mercury should be so mixed that the alloy and mercury are incorporated, one with the other, and not

merely stuck together, as it were. Hence, incomplete mixing is another cause of failure.

Improper preparation of cavities for the insertion of amalgam fillings causes many failures. Many dentists, whose technique of cavity preparation for gold fillings and inlays may be perfect, seem to labor under the impression that because amalgam is apparently more easily inserted, that all one has to do is to remove the decay and fill up the hole caused thereby. Nothing could be more erroneous or misleading, for to do good and lasting work in amalgam, one must be just as careful of cavity preparation as in gold work and must follow practically the same rules laid down. Very often there is no flat seat, no step, no retentive form attempted, but simply a hole, surrounded by frail undercut enamel walls. Such a filling is very easily unseated, and cannot last. Too many operators rely on undercuts in the cavity to retain the filling. These undercuts often cause the loss of the filling by the fracturing of the undercut enamel.

To avoid failures from this source, operators must pay just as careful attention to the proper sealing and retentive form of their cavity as though they were going to insert an inlay.

Lack of extension for prevention causes many failures, for be your amalgam ever so good, and your manipulative technique ever so perfect, yet if the margins of your filling are not self-cleansing, then at best it is only a temporary filling.

Faulty finishing of amalgam fillings is another cause of failure. No attempt is made in, I think, the majority of cases, to give an amalgam filling the high finish and polish it is capable of taking, and certainly should receive, to bring out the best that is in your filling, and give it, as it were, an even chance with other kinds of filling.

When polished first with corundum stones, then disks, and then powders, the effect is most pleasing, both to patient and operator, and adds years of life and usefulness to our filling. For rough margins and surfaces, even though the filling does not undergo any subsequent change in form, are sure to collect debris and mucus, thereby causing a return of caries.

An operator changing from one alloy to another often causes failure, for the manipulation that produces the best results with

one alloy will not bring out all the good points of another.

Amalgam, in the mind of the public, is looked upon as an easy, cheap and quick filling, an opinion which has been instilled into the public mind by the dentist himself. So long as that opinion prevails, and is fostered by the dentist by doing "easy, quick and cheap work," then amalgam will never rise from the disrepute into which it has fallen.

An amalgam filling properly inserted is not cheap, quick and easy, but one which takes almost the same time as that required for gold. When operators spend the proper amount of care and skill in cavity preparation, in the technique of insertion and in the finishing of amalgam fillings, then, and then only, will amalgam find its true place in dentistry, and the query, "Why do amalgam fillings fail?" will, in the main, have been answered.—*Dominion Dental Journal*.

REMARKS ON CASTINGS.

BY ROBERT N. LE CRON, D. D. S., LONDON, ENGLAND.

At the present time the cast-plate seems to hold the center of the dental stage among the recent reproductions in metal, especially in England, where plate-work flourishes to a greater extent than in any other country. Hence those interested in the experimental stages of casting are called upon to answer many questions as to the reasons for this, that, and the other regarding the results, possibilities, and the future of the cast-plate.

This branch of the work still being in its infancy renders some of the questions asked practically impossible to answer. We can only hope to arrive at definite conclusions after a long series of experiments along practical lines, not alone from a demonstrator's viewpoint, but from conclusions based upon practical work in the mouth of the dentist himself. Casting under pressure is ancient, yet it is a new idea as applied to dentistry today, and like all new things, is being worked to death, just as porcelain work was misapplied in many instances; but like all things abused it shall find

a place amongst the branches of dentistry according to its merit as tested by time.

The echo from all sides seems to be complaint as to the casting of thin gold plate. It seems strange that so much stress should be laid upon the idea of a *thin* plate. True, in the case of gold the thin denture is that which is desired and necessary, but, nevertheless, it is curious that a thin gold plate, full or otherwise, should be the source of so much trouble and comment, when some of the following details are taken into consideration. From a casting standpoint only, the thicker the plate or the more bulky the object to be cast, the greater the air space or cushion within the mold to get rid of, after the wax or object has been burned out and the greater the amount of metal necessary for the casting of same, and in like proportion the greater the surplus metal required, consequently a greater heat must be used to melt this bulk of metal and a still greater care to see that it is not only molten, but in a proper condition to flow into a mold. Then, too, the greater the mass of molten metal over the gate openings,* especially with gold or any of the heavier metals, the greater the liability for that metal to sag or even flow into the gate or gates before the pressure is applied. Hence, the thinner the plate or the object to be cast the less the difficulties and the easier and more certain the result.

One of the most important factors in casting, regardless of the method used, whether it be by gravitation or by pressure, is the getting rid of the air from within the mold quickly and with the least possible resistance to the escape of that air, as the molten metal enters and spreads to the remote parts or crevices of the mold.

While watching various demonstrations on casting, I have heard the question asked and have been asked many times myself: What becomes of the air cushion within the mold? Demonstrators must have an answer ready at all times, otherwise they are liable to find themselves in an awkward position. Some insist that upon heating up the case the air within the mold becomes rarefied—and so it does; but not to the extent of producing a vacuum, as sometimes implied, or anything approaching such a highly rarefied condition. If it were possible to produce a vacuum—the casting apparatus with the method of melting the metal in a crucible directly over the gate openings would be practically useless. If such was a fact, upon melting the

metal upon a flat crucible-like surface of one of these highly heated cases, one would naturally expect bits of the molten metal to be drawn into the mold as parts melt and fall away from the yet unsettled portion, instead of melting gradually and remaining in a liquid mass over the gate openings, until a positive pressure be applied.

Perhaps the above is the case of some failures, where the case is heated until it glows red from within the gate openings. In speaking of extensive castings where fifteen or more hundredweights of heavy metal are used, capillary contraction is not sufficient to cause the molten mass to globulate to any great extent, far less overcome the suction from beneath, caused by the supposed vacuum within the mold.

The air surrounding the molten mass becomes more and more rarified, it is true, as the intensity of the heat increases for melting purposes, and no doubt, theoretically overcomes and counteracts the vacuum within the mold, which space has had a greater or less opportunity to cool while melting the ingot. (At least this is one explanation set forth.) If the above be a correct theory the question then arises: Why, if the mold be ventilated, is the molten metal more liable to sag into the gate openings, or to actually flow into the mold without the application of pressure providing the mold be sufficiently vented than in a case where mechanical vents are lacking?

For instance, before Dr. Taggart conceived the idea of casting as it is now applied to dentistry, some were casting into matrices. Shortly after his method was given out, but not known in detail to the profession generally, many more were experimenting along these lines of gravitation.

This method is known to all and simply consists of a mold with a vent leading from the same to the outside of the investment, and a large gate opening into the same. The metal, instead of being melted over the gate opening, was melted in a crucible to one side with a lead or avenue to the large orifice of the gate opening. As soon as the molten metal was in the proper condition to flow, the case was tipped to one side, allowing the metal to flow into the gate or runner and gravitate thence into the heated mold. This method was applied only to small castings, and the success of the same depended not only upon the thorough heating up of the case, a large

gate and plenty of metal, but also upon the vent opening to allow for the escape of the air from within the mold. These cases were heated extremely hot, yet the rarification of the air within the mold thus brought about was not sufficient to secure a perfect result in any instance, unless there was a vent from the mold to the outside. One realizes quite readily how difficult it is to pour water or any liquid into a bottle or closed flask where the air contained within must escape from the same aperture through which the liquid is being poured. If however, there be another outlet to the atmospheric pressure within the flask the procedure is quite simple.

With castings such as poured by the working jewelers in cuttle-fish bone, and those on a larger scale in foundries into molding sand, some of the important details are as follows: *Sufficient vents, a large runner, depending on the size and the complication of the casting in hand, and sufficient bulk of metal in a thoroughly molten conditions to flow.* At least these were the prime factors most impressed upon my mind while taking a course in a molding shop. All necessary on account of the mold being cold, and the flow of metal depending alone upon its own weight and the surplus behind called the runner and sufficient access to all parts of the mold to enable the liquid mass to spread quickly to all parts without interference from the air within.

Though a mold be well vented, if it be filled from the top the casting is liable to be full of blow holes. In such cases dense castings may be obtained by giving an extra length at the top of the mold away from the runner—the unsound portion being thus formed in this extra length and cut away afterwards as the deadhead.

In casting a metal under pressure, the conditions are different and allow and necessitate certain changes or deviations from the old method; however, it is always well to bear in mind the law of gravitation and the details governing cheoplastic art.

On account of the metal being melted in a crucible, directly over the opening or lead into the mold, instead of pouring the liquid mass into a runner—this lead or gate must be much smaller in diameter. If too large the metal is liable to sag into the same; if too small the construction offers too great an obstruction to the flow of the metal. With small castings, it is remarkable what a small gate opening the metal may be forced through.

I have been trying to determine by a series of experiments, not yet completed, the size, length and number of the gate wires necessary for the various castings in the different metals; for each metal allows of a different treatment. With aluminum or any of the lighter metals, most any size gate seems to answer the purpose; but as there is no tendency for these metals to sag a very large gate will be found most useful. The heavier metals in large castings require more care in the selection of the gate wires; with such metals as tin and Watts metal that melt at a low temperature and remain liquified for some considerable time, smaller gates may be used than with the same case in gold that solidifies quickly.

If attempting a large casting in gold through one lead, there is an influence towards using a large gate wire, thereby rendering a failure more possible. Hence I prefer to use two or more smaller gates leading to various parts of the mold to minimize uncertainties. Casting a metal into a mold in a bulk, is quite different from that of casting the same quantity where it must spread for some distance from its entrance into the mold.

In short, with the data to hand, I cannot but say that I adhere to the following details as near as possible until I satisfy myself more fully on this subject, *i. e.*, the heavier and the greater the bulk of the metal to be used with the exception of tin and Watts metal and similar metals and the thinner the object to be cast, the smaller the gate openings and the greater the number of the same radiating from a common center to various parts of the mold, and last, but by no means least, the flatter the crucible or surface upon which the metal is to be melted.

Certain stress has been laid upon the subject of ventilation, yet a few more words may be added. There are many methods whereby this important procedure may be accomplished. With small work, the porosity of the investment should be quite sufficient. By the word small I not only imply inlays, but crowns, bridges—in fact, any design within the radius of two and one-half inches. Larger objects may be cast relying upon the same escape for the internal gases, in which cases the procedure of investing is an important detail, *i. e.*, to be certain that the distance through the investment from the top down to the mold is greater than the distance from the mold down through the base, and where the metal must flow for some con-

siderable distance from the entrance of the gate openings into the molds, to be careful that these remote parts be quite near to the base, so that as the metal enters and spreads to those distant parts the air confined therein is forced through but a very thin layer of investment to the outside of the cup; and the pressure from above has little chance of driving air through the thick investment over these parts before the metal spreads to the same.

The air within the mold is either taken up by the investment similar to a sponge absorbing water, and like the sponge, it has a limited capacity, after which the remaining air must be driven through the investment to the outside or remain within with the liability of causing blow holes by reacting upon the molten mass or defects by not allowing the metal to spread. Any air driven out into the investment is driven there under pressure; hence to further assist the escape of internal air or gases I find it quite convenient to perforate the lower strata of investment through into the mold with a fine, smooth broach before the wax or object is burned out. To leave these mechanical vents open is liable to cause trouble if a heavy metal is to be used; by rubbing some of the surplus investment over the base these holes or vents may be temporarily stopped to hold the air cushion within, which in turn prevents, along with other details, the metal from sagging into the open gate while being melted. As soon as the pressure is applied for casting, these slight stoppings blow out, leaving open rents through which the air may pass with the least possible resistance.

If there is any one detail in the mechanical process more important than another, I should say that it is in the melting of the metal. There is a certain condition of a molten metal at which that respective metal will cast to the best advantage, *and it is not the boiling point*. Any ordinary blow-pipe may be used that will, with the proper manipulation, melt the metal quickly with a strong blue flame; in no instance should a large smoky flame be used, for it only tends to oxidize and spoil the working of the metal. Once the metal has been melted, one should not be too anxious to cast, but should employ a small soft flame for a short time upon the already molten mass until certain it is in a proper condition to flow into a mold. Take, for instance, in the ordinary casting of zinc and lead for dies, etc., considerable care is taken that the molten metal is not

bubbling from being too hot, and, on the other hand, not sluggish from being too cold before pouring. If the metal be in the proper condition one need not be in a great hurry to apply the pressure, for it will remain in a liquid form for some considerable time.

In conclusion, simply because the molten metal is to be driven by force into the mold is not a sufficient reason for being careless about the melting of the metal, even in such simple castings as inlays, and yet expect an apparatus of any description to duplicate perfect castings under such adverse conditions.—*Record*.

SILICATE CEMENTS.

BY DR. GUSTAVUS NORTH, CEDAR RAPIDS, IOWA.

Artificial enamel or chemical porcelain recently brought before the profession is certainly an ideal filling material for certain classes of cavities where there is no contouring or strain upon the filling.

The rubber dam must be applied in all cases, for dryness is one of the essential points in manipulating silicate cements.

Cavities must be prepared so as to retain the filling and directions strictly followed in preparing and handling the material throughout.

Steel instruments must not come in contact with the material for they will destroy the texture and color of the filling.

The cement should be prepared according to instructions and packed into the cavity with ivory, bone or celluloid instruments or polished hickory points and the surface of the filling finished with celluloid strips. Remove all surplus material and before crystallization has fully taken place, use celluloid strip slightly coated with cocoa butter and draw the strip back and forth over the filling a few times, which will give a smooth, polished surface, similar to porcelain. If the color has been properly selected the filling will hardly be perceptible.

The filling must be kept absolutely dry for twenty to thirty minutes and then covered with paraffine. In removing the rubber dam be careful not to dislodge the paraffine.

Care must be taken not to incorporate the cocoa butter into the surface of the filling or it will deteriorate and become porous. If the instructions are ignored in the manipulation of silicate cements, failures are sure to result. Some operators have failure with gold fillings, but that is no fault of the gold and the same can be applied to silicate cements.—*Record*.

BISMUTH PASTE IN THE TREATMENT OF PYORRHEA ALVEOLARIS.

BY RUDOLPH BECK, D. D. S., CHICAGO, ILL.

(Read before the Los Angeles County Dental Association, April, 1909.)

In offering a new method of treatment of pyorrhea alveolaris I am bringing a subject of vital interest before you, since our present methods in dealing with this affection have been very disappointing. I shall not dwell at length on its etiology and pathology, there being many valuable contributions in our literature on this phase of the subject, and shall only review the methods of treatment now in vogue.

Pyorrhea alveolaris is a suppurative inflammation of the periodontal membrane, including the alveolar process and gums, causing the breaking down of the alveolar process, discharge of pus and finally a loosening of the teeth by the destruction of their membranous attachments. If this process continues, the teeth fall out, and thereby the disease is terminated. Opinion among dental practitioners differs as to whether the disease has a local or constitutional origin. A great deal of investigation has been carried on to determine the etiology, but up to the present time no specific organism has been isolated to which the pyorrhea alveolaris could be attributed. My opinion is that a large percentage of cases are of purely local origin, while in others constitutional disease, such as diabetes, chronic nephritis, faulty elimination, etc., is the underlying cause and the local manifestations are secondary to it.

It is obvious, therefore, that all cases will not yield to the same treatment. Those of purely local origin will naturally yield to local treatment, while the same will fail when constitutional disease is the

prime cause of pyorrhea alveolaris. This to a degree explains our failure in some cases, when the constitutional origin is ignored.

Let us briefly review our present methods of treatment. We remove the deposits around the teeth by scaling and polishing the roots, we inject antiseptic and astringent solution into the pus pockets, assisted by massage of the gums or X-rays, and we apply radiations or high frequency currents to improve the circulation within the gum tissue. Ligation of loose teeth and the extraction of hopeless teeth and their substitution by bridges are valuable additions to the treatment. By the application of these methods many cases yield to treatment, while the majority are either entirely resistant or only temporarily benefited. My explanation for many of our failures by the described methods is that either the constitutional treatment has been neglected, or if the pyorrhea is purely local, the remedies applied locally have not reached the seat or the origin of the disease process. It is, therefore, essential that before deciding on any treatment it be determined whether the pyorrhea alveolaris is purely local or the result of a constitutional disorder. The constitutional treatment must either precede or be carried on in connection with the local treatment.

This brings me to the subject of my paper.

In the January, 1909, number of the *Dental Review*, I published a preliminary article on the use of bismuth paste in the treatment of pyorrhea alveolaris. This method consists in injecting a warm liquified bismuth-vaseline paste into the pus pockets of the teeth affected with pyorrhea alveolaris. For this purpose I employ an all-metal syringe, holding about a half-ounce of the paste, provided with a flexible, tapering, blunt point, made of pure silver, platinum or gold.

The paste consists of:

Bismuth subnitrate.....	30 per cent
Vaseline	60 per cent
Paraffin	5 per cent
Wax	5 per cent

Prepared as follows: The vaseline, paraffin and wax are boiled and the bismuth subnitrate is added and stirred in as soon as it is taken from the flame. The syringe is then charged with the liquid paste, the point of the needle introduced into the deepest part of the

pus pocket and by gentle and steady pressure the paste is so injected that it reaches all diseased crevices of the socket. I do not remove any of the deposits previous to the first injection. At the next sitting I remove all deposits and useless teeth; also remove or correct all obstructive materials, such as ill-fitting crowns or fillings, cleanse and polish the teeth to be retained, and ligate them with strong non-elastic material.

I then make a second injection and have the patient return in two days. The injections hereafter are repeated every other day until the discharge stops and the tissues resume a healthy condition. The frequency of injection varies according to the pathological condition present, and is determined in each case individually. This method of treatment has been employed by me in a large number of cases of pyorrhea alveolaris, and the results thereby obtained are far superior to those obtained by any method I have heretofore employed, so that I do not hesitate to recommend it to the profession. Among these cases are many of long standing, which had resisted former treatment, and which after a few injections of bismuth paste entirely cleared up. The results were not at all surprising to me, since I knew what could be accomplished with this paste, having for several years observed its application by my brothers in chronic suppurative sinuses, and I desire to quote their explanation of the factors which produce these favorable results. Dr. Joseph C. Beck states in a paper published January 2, 1909, in the *Journal of the American Medical Association*, the following: "Either the metallic bismuth or the nitrate coming in contact with the diseased tissues produces a local leucocytosis and changes in the connective tissue cells, both of which destroy the vegetable organisms. When the bacteria are destroyed, the disease process undergoes resolution, provided no foreign body, sequestrum, or necrosis be present."

In general surgery, where large quantities of this paste are injected, there is a possibility of it being absorbed, causing symptoms of chronic intoxication similar to those of lead poisoning. This can hardly be considered a danger in dentistry, where the paste is used in such small quantities and not liable to absorption. Experience with this paste has certainly proven very gratifying, and I trust the dental profession will give it an earnest trial. Although not sufficient time has elapsed to form final conclusions as to the

permanency of the cure, the method should be tested and then given its proper place in the treatment of pyorrhea alveolaris.

CONCLUSIONS.

1.—The injection of the 30 per cent bismuth-vaseline paste into the pockets of pyorrhea alveolaris is a remedy superior to any thus far employed.

2.—The same paste injected into the fistulae of chronic alveolar abscesses or sinuses of the jaws produced a rapid closure of same, provided every recess of the sinus has been reached and no sequestra are present. Tubercular sinuses are no exception.

3.—The secretions of the sinuses change their character after injection; they become serous and the micro-organisms gradually diminish and finally disappear.

4.—Bismuth subnitrate is a bactericidal and chemotactic substance which is slowly absorbed and slowly eliminated.

5.—By its retention in pus pockets and not being acted upon by saliva, it prevents further infection and decomposition.

6.—No serious complications due to bismuth absorption need be anticipated, since 100 grams of the paste are rarely used. In larger doses it may produce symptoms of ulcerative stomatitis, with black borders around gums.

7.—As a dressing in cavities it is preferable to any other, inasmuch as it promotes healing of chronic suppurations and rapid formation of granulations.

8.—Where systemic disease is the underlying cause of the pyorrhea, the general treatment in connection with the local is imperative.—*Record*.

ABSTRACTS AND SELECTIONS.

A SIMPLE METHOD OF CHANGING THE COLORS AND MODIFYING THE SHADES OF ARTIFICIAL TEETH.*

BY DR. F. E. ROACH, CHICAGO.

In our efforts to secure the highest degree of mechanical perfection in our prosthetic work, are we losing sight of the artistic?

While perfection of fit and adequate strength are prerequisites to the greatest efficiency of all prosthetic work, a failure in the observance of the cosmetic requirements in a reflection upon our esthetic sense. Granting that any artificial substitute for the natural dental organs should first of all be useful, it should at the same time be beautiful, and to be beautiful it must look natural, and in order that it may look natural it must be in harmony with that which nature has endowed its wearer.

In the selection of a set of teeth for the edentulous mouth, the two most important factors governing the proper selection are the form and color, and of the two the color in my opinion is of the greater importance. A study of Thompson's Table of Temperaments will be of great value in determining both the form and the color. Each of the four temperaments demands a distinct type of tooth though the color may be variable. Dr. E. J. Perry, in his paper on the "Law of Harmony and Correspondence," classified his patients into two general types, viz., blondes and brunettes, and under this classification determines the color—those for the blondes running to the yellows and for brunettes to the grays.

In a general way this rule is of much value, and if followed will yield very satisfactory results. But in neither Thompson's "Table of Temperaments" nor "Perry's Law of Harmony and Correspondence" do we get it all. The variation of the shades of the different teeth is of equal if not greater importance.

There is probably no greater breach of the law of harmony and correspondence than the placement of improperly colored teeth in the mouths of our patients.

There is surely no more frequent evidence of our lack of appreciation as a profession of the true sense of art than the glaring incongruities of color that are so frequently seen in porcelain teeth

*Read before the Illinois State Dental Society, May, 1909.

of various kinds in the mouths of people we meet in the various walks of life.

The manufacturers have done wonderfully well in their efforts to supply us with teeth true to nature in both color and form, but in neither form nor color can they supply all that is required to meet the great variety of conditions, and it is an admission of our deficiency in manipulative skill if we cannot meet the requirements with the materials that are at our disposal.

While I am not disposed to grant that the manufacturers have done all they could for us in the way of forms, and especially is this true of the molars and bicuspid in plate teeth, I do not see how it would be possible for them to supply us with a greater variety of shades and colors. And yet with all this great selection, it is often impossible to get the tooth with that touch of individuality and character so necessary to harmonize with the case in hand. This is especially true in crowns, bridges and partial cases.

Every practitioner of dentistry with any experience at all, and who has any pride in the artistic results he obtains, will, I am sure, admit the inadequacy of even the stocks of teeth carried by our largest dealers when it comes to the exact matching of a great many of the natural teeth adjacent to which we are so often called upon to place crowns, bridges and partial plates. How often have you said to your patient that you had looked over several big stocks of teeth and had been unable to find a better match than the one you are trying to apologize for? How often have you sent back, either by mail or by carrier, in your vain attempts to satisfy yourself and your patient with the color of some tooth being placed in the mouth? How often, in fact, have you actually gone in person and spent perhaps hours of your valuable time in search of this much desired tooth and after all be compelled to apologize for it if your patient was at all particular, and if not, you no doubt suffered the sting of dissatisfaction yourself and wished you might have done better?

When supplying full sets there is not the necessity for the exactness in matching up colors with the natural teeth that we have in crowns and partial dentures, but in order to secure the best results from a cosmetic viewpoint, there should be a difference of shade in teeth used.

According to the idea advanced by Dr. E. A. Royce, the normal

shading of the full denture is as follows: The upper central incisors are the lightest in color and are taken as the standard by which the degree of shading is measured. Dr. Royce found, upon a close examination of several hundred mouths, that on an average there were five or six different shades in the full denture, either upper or lower. It should also be noted that the colors vary in intensity from one to eight shades.

Since the publication of this most valuable article of Dr. Royce's, I have made a study of his color scheme, or rather shade scheme, and I am thoroughly convinced that he is absolutely right, and I am of the opinion that it is one of the most valuable contributions to prosthetic dentistry in the past decade, and its teachings should be understood and practiced by everyone of us.

The argument so often advanced that the majority of our patients do not appreciate our efforts in this direction, should not deter us from raising the standards of our services from an artistic point of view.

First of all let us educate ourselves and then educate our patients to an appreciation of the art side of our work. In my eighteen years of practice and ten or twelve years contact with infirm patients, I have not yet seen one person who could not be made to appreciate the difference between harmony and correspondence, and monumental incongruities. In other words, most people will accept a set of teeth or a crown that looks natural in preference to that which stands as a monument to the lost members.

Though cognizant of the indifference of a great many of the profession to anything that pertains to prosthetic dentistry, I am nevertheless sufficiently optimistic to believe that the majority of the profession are still doing some prosthetic work and are interested in its betterment. Even though a portion of the work be assigned to a laboratory or an assistant, the most important part of the operation is that performed in the mouth. The success or failure of the case depends absolutely upon the execution and direction of each step in the operation that emanates from the chair. And surely the one who does the work in the mouth is held responsible for whatever it is, be it good, bad or indifferent; so that regardless of the boasts made by many that their time is confined exclusively to the chair, a large part of it is nevertheless prosthetic work.

It is the purpose of this paper to call your attention to the use of mineral stains and oil colors. While these materials have been on the market for a number of years, their employment has been directed more to the reproduction of freakish conditions than to the changing of colors and modification of shades. The impression prevails that these materials are only useful for producing the tobacco stained dentin of abraded teeth, Hutchinson teeth, and the like, when as a matter of fact, these are insignificant uses as compared with their employment in shading the teeth in full dentures, and in producing the mottled or clouded effects so often necessary in crowns, bridges and partial cases. And while the Royce shading may be carried out quite satisfactorily by selection from stock, the matching of the natural teeth with crowns and partial cases in this way is often impossible and for these cases the mineral stains and oil colors are absolutely indispensable to the man who is striving for the highest degree of art in his work. And the mastery of their use gives one a feeling of independence that is indeed satisfying. There are no cases of unusual coloring or shading that cannot be matched almost perfectly, and my experience justifies the belief that almost all of the porcelain teeth placed in the mouth will look more natural if a film of these stains be spread over their labial or buccal surfaces.

Now a word about the technique. The handling of these materials is so simple that it seems unnecessary to go into this phase of the question, and yet knowing how little they are used, I must conclude that they have either been misused and abandoned or have not been tried at all. In either event some instruction would seem necessary. The material must be reduced to an impalpable powder and when mixed with the water should be thoroughly spatulated, so that all lumps will be obliterated. The surface of tooth to be stained should be clean. The glaze need not be ground off, as has been recommended.

With a small camel's hair brush moisten the surface of tooth and then dip brush into the previously mixed stain and with a stroke of spread where desired. The entire surface of the tooth should be the brush across the surface of the tooth the stain will be evenly gone over to obtain the best results, and care must be taken to avoid blotches by allowing the stain to accumulate in patches.

In the application of the colors to a tooth it is well to remem-

ber that it is easier to darken than it is to make the shade lighter, though the latter may be done very effectually in many cases.

It is not necessary that one become expert in the mixing of all the prime colors to produce the myriads of tints used in china painting, though a knowledge of the basic principals in combining some of these colors will be very helpful at times. When we consider that the predominant colors in the natural teeth are not distinctly prime colors, but combinations and blendings of colors that produce the grays, creamy yellows, browns and greenish tints, and that our mineral stains are furnished in similar combinations, it is at once apparent that we have to deal more with modification of the shades of the colors as we find them rather than to the changing of the color altogether. For instance, if it is desirable to intensify or darken a creamy yellow tooth, a thin film of brown on the surface will do it; a film of white over the surface will, of course, produce a lighter shade.

In the selection of teeth for full dentures it is best to get them a shade too light with the view of shading them as desired. As a matter of fact, it is possible with a medium light creamy yellow tooth to produce any of the darker shades and colors with a greater degree of accuracy than by selection from stock and at a greater saving of time and bother.

The colors that will be most used are brown and gray, and as a matter of fact these two colors will meet the requirements in about 95 per cent of the cases. As an illustration we will, for convenience, refer to the colors on the S. S. W. shade guide and show how they may be changed at will with these two colors—for instance, shade 34 may be readily changed to 35, 36, 37, 39, 41, 42 or 43 with the brown—shade 34 may also be easily changed to 30, 31 or 33 with the gray. To change shade 34 to 32, 38, 40, 47, 48, 49 or 50, will require both brown and gray. A trace of gray over 27 will produce shades 28 and 29—shades 44, 45 and 46 have a greenish cast and will require a green stain. Shades 26 and 34, being very light colors, are easily stained to any desired darker shade. With equal facility any of the intermediate shades may be changed to the darker shades with one or the other or with the combination of both brown and gray to the extent that they will serve all practical purposes in the great majority of cases if the rule suggested above of selecting teeth lighter than wanted, is followed.

Supplementing the brown and gray, I would suggest in their order of usefulness, yellow, black, blue, green and pink. Yellow serves best to lighten the brown, and black is preferred for darkening it, though blue or green may be used for this purpose. White is employed as an enamel to lighten the shade of a tooth of any color. It may also be employed to mix with other colors to make them lighter, though as stated above, the mixing of these colors is rarely necessary, as the intensity of the shades are governed by the thickness of the layer, and as has been shown, nearly all the shades on the guide can be produced with brown and gray.

In addition to S. S. White's Mineral Stains and Brewster's Oil Colors, I would recommend Lenox China Colors in the following colors: Ochre yellow, neutral gray, blue black, deep sea green and white enamel. The ochre yellow with a very slight amount of blue black added to it will make a greenish yellow brown that will meet the requirements in most cases for producing the various tints of yellow and brown—the intensity being easily determined by the thickness of the coat and by the addition of a larger proportion of the blue black. The neutral gray may be intensified, when necessary, by the addition also of the blue black. The clove oil preparation furnished by the art stores is best to use with these colors.

In conclusion I want to emphasize the importance of this subject to all of us, and especially do I want to emphasize its value to the man who is located where he has not access to large stocks of teeth. As a matter of fact, the mastery of the use of some one or all of these stains will yield a larger return for the time and money expended for its accomplishment than anything that I can call to mind.—*Northwestern Dental Journal*.

IDEAL ILLUSTRATIONS.

BY LOUIS FLADER,
Sales Manager Barnes-Crosby Company.

Experience has proven that advertising is not only a business, but an art in itself. Its fundamental principles may be briefly summed up to consist of the following:

First, to attract attention. Second, compel the reader to think. Third, create a desire and finally consummate the sale. It is with the first of the before-mentioned principles that we have to deal in this article, viz., to attract attention.

A great deal can be said concerning the value of text-matter as connected with advertisements and still more might be said about illustrations appearing in connection therewith. The fact remains, however, and is universally accepted, that to attract the desired attention, it is necessary to illustrate the reading matter. The acceptance of this theory differs with various men in regard to proportions only.

Thus we see advertisements in which the illustration occupies but little space and is insignificant in character. Then again we find ads in high priced mediums in which two-thirds to four-fifths of the entire space is covered by an illustration. Inasmuch as the latter proportions occur very frequently and are used by the largest advertisers in America, we can safely assume that "the illustration is the thing." Regardless of how much space you give over to illustrations, the interesting feature is, are you getting the best results that can be obtained. In other words, is the space for which you pay from fifty cents to six dollars a line, covered by an illustration consistent in value and pulling power with that space? Bear in mind that the cost of the illustration does not always determine its true advertising value. That can only be obtained by first having an "idea," and then having it properly executed.

The object of this article is to coöperate with the readers of this publication, and give them the benefit of an engraver's experience in ordering engravings.

To begin with, photo-engraving being an art of reproduction, it is, of course, necessary to have "copy" before an engraving can be made. This "copy" may be a photograph, wash drawing, water color,

oil painting, or the object itself, but in all cases, the cost of the space intended to be covered by the advertising should be kept in mind.

To illustrate: You would not think of putting a ten dollar suit on a ten-thousand-dollar-a-year man, nor would you pin a diamond stud on a flannel shirt. If your advertisements are handled by one of the many advertising agencies, they will look after that feature. If you place your own advertising, it is up to you. At this stage, seek the services of the well-equipped and reliable engraving establishment; one possessing an organization capable of producing *ideas*, as well as printing-plates. State your requirements plainly and fully, and see that your "copy" is all that you wish it to be.

While the cost is not everything, do not be afraid of a few dollars for retouching of photographs, etc., that may be necessary. Remember that dull, weak, crude copy will not make good, snappy, attractive plates.

Just a few words to familiarize you with the terms used in connection with "copy." A wash drawing is made with India Ink, or Sepia, the artist using a brush and washing in the tones, hence its name. Photographs we all are familiar with, and need no description, excepting to say a photograph made from an object is seldom fit for reproduction. Spots and shadows have to be removed, high lights drawn in, the perspectives corrected, etc. This work is termed retouching and is of vital importance.

Oil paintings are but seldom used for "copy" in advertisements, and are well understood and appreciated. Small articles, such as jewelry and flatware, can sometimes be reproduced to advantage by the half-tone process direct, without any intermediate process of photography or drawing.

All of the foregoing kinds of "copy" can only be reproduced in half-tone process. Pen drawings, reproductions of wood engravings, lithographs, steel engravings and all designs and drawings consisting of a series of black lines are best reproduced through the medium of zinc etchings. Half-tones are best adapted for the better class of paper and press work. Zinc etchings may be used anywhere and under any conditions that permit the use of type.

The next installment will contain information in regard to engravings, or "cuts," as they are commonly called, which can be classified as half-tones, zinc etchings and electrotypes.

(SECOND INSTALLMENT.)

The preceding installment of this article was intended to arouse interest in the minds of advertisers and bring them to a realization of the value of advertising space and the desirability of making the best use of it by employing "quality" illustrations. It dealt entirely with the preparation of "copy," and the writer tried to impress upon the readers the advisability of obtaining *perfect* "copy." Perfect, from an advertising, artistic and mechanical standpoint. It is by a judicious combination of these features, that "quality" engravings are obtained.

As before stated, photo-engraving being an art of reproduction, it is impossible, in the true sense of the word, to improve upon the "copy" furnished, consequently the "copy" should represent perfection in the eyes of the advertiser before it is placed in the hands of the engraver for reproduction.

Without going into a technical description of the process of photo-engraving, which would only tend to confuse the reader, it is necessary to use a number of trade terms, the meaning of which will be here explained.

HALF-TONES.

A photograph, wash drawing, or oil painting contains besides black and white many intermediate tints, which are termed half-tones. These are essential to the picture. The half-tone process owes its name to the fact that it retains these tints. This has been accomplished by making a photographic reproduction, which is broken up into dots, by means of a succession of fine lines of right angles. Half-tone engraving is the only process by which photographs, wash drawings and things of a like nature can be reproduced for use upon the letter-press.

A half-tone is made by interposing a screen between the "copy" of a sensitive photographic plate. This produces a negative consisting of the lines and dots. This screen consists of two pieces of glass which have been ruled with very fine lines. These are joined together with the lines crossing at right angles. The ruling on different screens varies from fifty to two hundred lines to the inch. If there are one hundred lines to the inch it is termed a one hundred line screen.

A screen in every instance derives its name from the number of lines ruled to the square inch. Screens from fifty to one hundred lines fineness are considered coarse and are used principally in making half-tones for newspaper and other very fast printing, upon a low grade of paper. Screens of one hundred ten to one hundred thirty-three lines fineness make half-tones for general use on supercalendered or enameled paper. Screens of one hundred and fifty to two hundred lines fineness can be printed to good advantage only on very fine paper. The finer the screen the less noticeable the lines and dots and therefore the more pleasing the results, but the finer half-tones are much more difficult to print.

There are various ways of finishing half-tone plates, the most common way is to finish them square, that is allowing the background to come out to the edges of the block. It may have a fine black line around it, or not. If so, it is spoken of as square with line, if not, square without line. Half-tones finished square with line are the easiest to print, as the black line serves as a bearer, relieving the center and edges of the plate from pressure and ink in the printing. If the background is cut away so the object is without any shading about it, it is known as an outline half-tone. If background is arranged so that it extends about the subject for a distance and then gradually fades away, it is styled a vignetted half-tone.

In a magazine or trade paper advertisement, it is advisable to use outline half-tones whenever possible, thus securing more space for type display and presenting a cleaner picture. The proper screen for half-tones to be printed in the advertising pages of the standard magazines is one hundred and twenty-line, and nothing finer should be attempted.

While the printing is generally good, the original plates never enter upon the press in this instance, but are always electrotyped, consequently it is necessary to furnish a clear, deep half-tone or zinc etching to each publication. Do not furnish electrotypes of an ad intended to appear in the standard magazine, as under these conditions they will again electrotypes from your electrotypes, this having a tendency to destroy the brilliancy of the plate.

In the trade journals half-tones vary from one hundred lines to one hundred twenty lines to the inch, and can be used to good effect with a tendency toward the first mentioned screen. Advertisers fre-

quently object to the coarseness of the screen employed, failing to take into consideration that it is better to have a half-tone appear clean and open, although somewhat coarse, than to have a fine screen half-tone which resembles a smudge instead of an illustration. If you use zinc etchings and if the "copy" has been prepared by a firm thoroughly equipped for this work, the final result appearing in your advertisement will be an illustration open enough to print clean and sharp.

Electrotypes are duplicate casts and can only be made from an original engraving of some sort, either half-tone, zinc etching, or wood engraving, and which acts as a pattern. In other words, before you can make an electrotype, you must first have a pattern, as described above.

The writer strongly advises the use of original half-tones and zinc etchings, instead of electrotypes. The difference in cost is comparatively small and the results obtained are well worth the price.

To illustrate: If you have contracted for space in five different publications and have paid for the design intended to be used in connection with your ad, by all means order five half-tones or zinc etchings, as the case may be, and do not attempt to save a trifling amount of money by ordering one half-tone and four electrotypes. The difference in quality between half-tones and electrotypes and especially the amount of wear derived from both, is altogether in favor of the half-tone.

The final injunction is this: Deal with a reliable house, put them in full possession of the facts, tell them what you want, and what use you want to put it to, and leave it to them. You then have a perfect right to expect the best results and you will not be disappointed. The poor appearance of many advertisements from an illustration standpoint is due to the fact that the engraver received arbitrary instructions and was compelled to follow them. It may be safely presumed that he knows his business. Why not take advantage of his knowledge? It is to your decided advantage and costs you nothing in addition.

DANGERS OF THE X-RAY.

Misuse or excessive use of the X-ray has been proved to be attended with much danger that one shudders to think how carelessly and freely every one was exposed to it in the early days of experimentation. The ray is of the utmost value in diagnosis, but it is like some potent drug, to be used only by experts and with the utmost caution. Says Dr. Gordon G. Burrdick, of Chicago, professor of radiotherapy in the Illinois School of Electrotherapeutics, writing in *The American Journal of Clinical Medicine* (Chicago, April):

"It is curious how few physicians realize the dangers of the X-ray, and disregarding the repeated warnings in the medical press, go blindly into using this agent, with a child-like faith in the manufacturer's statement of safety that is sublime. It is not possible to estimate the actual damage that has resulted from the application of this form of energy in the hands of many well-meaning but dangerously incompetent persons.

"I had occasion several years ago to investigate this matter and made arrangements with a newspaper clipping bureau to furnish me all the material they could on the subject. The immense amount of clippings from our newspapers on this subject cost me about \$18 a month, and unquestionably would be double that amount at the present time, owing to the more general use of the X-ray.

"By correspondence and from investigation of court records it is evident that but a small percentage of these cases have found their way into court. Yet in our own country alone about 120 cases are on the dockets. Many of these accidents have all the earmarks of the grossest criminal carelessness, and many of them are due to institutional negligence. One remarkable case of this kind happened in one of our hospitals.

"They attempted to make a skiagraph of a man's kidneys, and after putting the plate under him, turned on the machine and promptly went away and forgot all about him. He had an exposure of one hour and forty-five minutes. This produced a horrible injury. The skin and muscles became necrotic all over the abdomen, and it was over two years before skin-grafts would take. This case can be multiplied by fifty that have come under my own immediate observation and have all happened within one state. What would the number be if we had the statistics from the whole United States? Injuries to

other parts of the body have become so common as scarcely to excite comment."

"That very slight exposure to the rays will cause incurable sterility in both sexes, has been amply proved, Dr. Burdick tells us, and he presents a large body of evidence on this point. In fact, persons all over the scientific world are suffering today in all sorts of ways to pay for their rashness in handling an agent of whose effects on the bodily tissues they knew little or nothing. Dr. Burdick goes on:

"The danger that has been done by unthinking manufacturers and physicians who have allowed children of tender years 'to see the bones of their hand' with the fluoroscope can only be guessed at, but a heavy toll has undoubtedly been exacted, that will become apparent in after years in various ways.

"To see the average X-ray operator, is to see an individual who has been unthoughtful and careless, one who will bear the marks of his blind enthusiasm to the grave. They are falling all around us, dying with cancer from the chronic irritation, amputations of arms, legs, removal of bones that decayed from too much exposure, and so on. To see many of the electricians who have lived in the atmosphere, is to see a living death personified, the tissues becoming corroded with exquisitely tender ulcers, cracks, etc., making life bearable only under the influence of morphine.

"These people, however, cannot plead ignorance. They have been warned repeatedly by those who know, and their injuries could have been avoided by using a certain amount of discretion in their work.

"That I may not be misunderstood, let me say that I do not condemn the use of the X-ray for any legitimate purpose.

"As a diagnostic agent nothing will or can take its place. As a therapeutic agent for a limited class of diseases, not amenable to treatment by any other means, this has been a benediction from the Almighty. That it has been misrepresented and has suffered from much ignorant handling and dishonesty cannot be questioned.

"There will come a brighter day in medicine, when this mysterious form of radiation will receive its full recognition, and will become a blessing instead of a curse to humanity. It would be my advice to all young physicians who have a duty to posterity to perform to keep away from this form of energy or they will pay a fearful penalty with no compensating features to justify the sacrifice."—*Literary Digest*.

THE MAN IN THE RUT.

At not very infrequent intervals the sentiment is expressed in our society meetings that the practice of dentistry tends to "narrowness," that it presents no opportunity for mental development and the personal cultivation of other arts and sciences; in short, that its field is restricted and bounded by limitations impossible to surmount. That dentistry, as it is practiced by many, gives just grounds for the expression of such pessimistic ideas is not to be denied; but that the personal habits and methods of practice of some of our fellows should be taken as a fair standard of measurement for the entire profession is most unjust.

It is true that the practice of any calling, followed uninterruptedly and to the exclusion of everything else, will make one, in the course of time, unfitted to engage successfully in other pursuits; but one need not become narrow in any vocation if he will embrace the opportunities his work presents from day to day or month to month.

No trade, no profession, no vocation, in fact, is standing still; it is only the individual himself who is in a rut when he can express such sentiments as we have mentioned.

The dentist who practices his profession, just as he learned it from his preceptor or in college, year after year; whose foot power machines have never been replaced with modern electrical appliances; whose college outfit of instruments, grown dull and dingy in long years of service, is still made to answer his purpose; whose bracket table, with its worn cloth cover and soiled paper napkins, is his nearest approach to aseptic appliances, is very apt to be one of those who find dentistry a narrow profession.

On the other hand, he whose office and equipment are up-to-date, whose journals are well selected and intelligently read, whose library contains the latest editions of the standard works relating to his profession, who finds in his own and his fellows' failures a keen incentive to renewed effort, finds his field of vision broadening continually, and growing with it in efficiency and usefulness, is not rut-bound and narrow, nor does he find his profession a narrow one.

There are thirty thousand dentists engaged in active practice in the United States, and less than thirty per cent of them belong to

dental societies, and still fewer attend their meetings regularly; probably less than five per cent contribute regularly to dental literature and no one knows how few are engaged in research or experimental work.

But this is not the fault of the profession, the final word has yet to be spoken regarding every branch of practice and application of pathological and therapeutic knowledge; the field is unlimited, the harvest awaits only the reaper.

The man in the rut is the one who has no time for study or recreation, no time for self-advancement along any line, professional or otherwise, and who finds in his daily work only a weary routine of never finished tasks.

When there is so much to be done in the profession of dentistry to widen its field of usefulness, to bring to the attention of the public all the benefits it may confer upon suffering humanity, to correct the false impressions regarding its merits and its methods so widely held by the uneducated, unthinking public; when every phase of public and private life is calling for the aid of those who are trained to think and act with method and precision, there is no excuse for the restricted mental vision of those who find dentistry a narrow profession or who feel that its practice restricts the field of human accomplishments.—*Editorial in Pacific Dental Journal.*

DEATHS UNDER ANAESTHETICS.

The Home Secretary, replying in Parliamentary papers to questions by Mr. Cooper, M. P., states that the deaths of persons returned on medical or coroners' certificates as due to anesthetics administered for surgical purposes since 1903 have been as follows:—1903, 146; 1904, 156; 1905, 155; 1906, 183; and 1907, 186. The figures for 1908 are not yet available.

The deaths under nitrous oxide were:—1903, 5; 1904, 1; 1905, 1; 1906, 3; and 1907, 3.—*Commonwealth (Australia) Dental Review.*

MISCELLANEOUS

WEAKNESS IN BRIDGE WORK.

Most of us that do bridge work have had a bridge come back with a facing broken off. I wish to say that during two years of practice I have not had one come back. I use the following method: First I grind the cutting edge of the facing straight, then back with 36-gauge pure gold, or I sometimes use platinum foil. Then take a piece of pure gold and lay on the end of the facing and place facing and all in a piece of asbestos rope. Then place on the soldering block and flow in 22-carat solder. This gives a good, heavy tip with a good margin and will assist in drawing the solder where it belongs in the final soldering. There will never be any trouble from broken facings when this method is used.—*Dr. F. G. Worthley in Western Dental Journal.*

MIXING CEMENT.

When you mix cement, *mix it*; don't just pretend to. Have a clean glass or porcelain slab, big enough to mix on properly; and have it *clean*. Don't use a paper slab, as the paraffin wax of the paper will mix with the cement, no matter what the manufacturer says about his paper being absolutely impervious. Paraffin is all right—in its place—not in cement. Spatulate the cement quickly and thoroughly—don't be afraid to work at it. Work the cement till it is "smooth" and then stop. Too much mixing is just as bad as not enough. Spread the cement evenly and quickly on the band to be cemented, then dry the tooth; when dry, apply; the cement has firmly adhered to the band by this time, and the band being applied the instant the tooth is dry has a much better chance of sticking than if the tooth is dried first and the cement then mixed and applied—there are so many chances for it to get wet the latter way. These remarks apply equally well to cement mixing for crown and bridge work as for orthodontia bands.

MOVEMENTS OF THE JAW.

Can you tell exactly how the lower jaw moves during mastication? Do we use the teeth on both sides at a time, or only on one side? When we incise (*i. e.*, use the incisors only) do the molars touch? Just how does the jaw move during the heaviest work, and which teeth are used most? Can you answer these things? Then daily you are operating on and trying to repair machinery whose operation you do not understand. Would you stand for this in somebody who was fixing some of your belongings, say your watch or gun? Well, hardly; not if you knew it. Then get busy and study up the mechanism of mastication before somebody finds out your ignorance.—*Dr. W. J. Brady in Western Dental Journal.*

SOFT SOLDERING.

It is surprising to find how many dentists try to use borax as a flux for common soft solder, instead of tinner's soldering fluid, the proper article. Borax is useful only when sufficient heat is used in melting the solder to also melt the borax, a matter of perhaps 1,000 degrees Fahrenheit. Soft solder—the ordinary solder of the tin shop—is best fluxed with either rosin or a prepared soldering fluid called "cut acid." This is to be found in every tin shop, and consists of an impure zinc chloride mixed with some free "muriatic acid" (the common name for commercial hydrochloric acid). A supply of this soldering fluid can be bought for a few cents, and will be found very convenient in the laboratory for other work than soldering attachments to regulating appliances.

OXIDE OF ZINC.

I use oxide of zinc mixed with $\frac{1}{4}$ of 1 per cent formalin in beechwood creosote to the consistency of a thick cream, and by means of a thread of cotton on fine broach force it to end of root, using care not to force it through the apical end; repeat until the canal is well filled, then insert gutta-percha points. With this material sepsis will not recur, as you have a material that sets as hard as cement, sealing the apical forament perfectly, and which is antiseptic and germ proof.—*Dr. T. C. Reid, Summary.*

PUTRESCENT CANALS.

In putrescent canals, where they may have remained in a septic condition for months, it is often quite easy to start a violent infection by simply opening into the canal with a drill and broach. This is, no doubt, the result of the mechanical effect produced by forcing the irritating contents of the canal against the living membranes in such a way as to produce sufficient irritation to favor the entrance of the army of pus-producing germs that are always present in putrescent canals.—*Dr. N. G. Leonard, Brief.*

THE CLINICAL USE OF RADIANT ENERGY FROM HIGH-POWER INCANDESCENT LIGHT.

There is a general idea that there is great virtue in the X-ray as a healing agent. The successful use of the X-ray depends upon the fact that the X-ray primarily is a destructive agent. When a destructive agent is applied to the tissues there ensues a reaction. It is this reaction to the ray that is turned to therapeutic usefulness, and if the X-ray is properly applied in suitable cases a certain reaction by the tissue is caused. The same result might follow, in different degrees, the application of any cautery, the use of iodine, the application of nitrate of silver and many other destructive agents.—*Office and Laboratory.*

HOW TO FIX A GASOLINE BLOWPIPE.

How much easier that gasoline blowpipe would be managed if we could do away with one of those pieces of rubber hose that are always getting twisted just when we are "just ready to flow the solder."

Try this: Drill a hole in the blowpipe just back of the air valve, solder in a piece of tubing. Attach short piece of rubber hose to tubing and connect with air pipe of blowpipe. Stop the air valve on the generator and leave blowpipe connected with generator by gas hose only. You will get the same pressure as before and the blowpipe handles so much easier. I have used mine about six months since remodeling and have no desire to go back to the "two hose" way again.—*Dr. S. P. Kelbourne, Summary.*

MEETINGS

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The twenty-eight annual session will be held at Denver, Colorado, on Monday, August 1st, 1910, commencing at 10 a. m.

Hotels and railroad rates will be given in a later issue.

J. J. WRIGHT, D. D. S.

President.

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Sec'y. and Treasurer.

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THE ODONTOLOGICAL SOCIETY OF CHICAGO.

The following officers were elected at the annual meeting of the Odontological Society of Chicago, held Tuesday evening, Nov. 2nd, 1909: President, Dr. W. V. B. Ames; vice president, C. N. Johnson; secretary and treasurer, L. L. Davis; Curator, J. H. Worley; member board of censors, Dr. E. A. Royce.

IOWA STATE BOARD OF DENTAL EXAMINERS.

The Iowa State Board will hold a meeting for the examination of candidates for license to practice dentistry in Iowa beginning Jan. 10th, 1910, at 9:00 a. m. in Des Moines.

For blanks and other information write the secretary.

E. D. BROWER,

Le Mars, Iowa.

SOUTH DAKOTA DENTAL BOARD.

The South Dakota State Board of Dental Examiners will hold its next regular meeting at Sioux Falls, S. D., January 11th, 1910, at 1:30 p. m., and continue three days. All candidates are required to take both practical and theoretical examination. The fee of Twenty-five dollars (\$25.00), together with application, must positively be in the hands of the secretary not later than January 2nd., otherwise the applicant will not be entitled to take the examination.

G. W. COLLINS, D. D. S.,

Vermilion, S. D.

INSTITUTE OF DENTAL PEDAGOGICS.

The seventeenth annual meeting of the Institute of Dental Pedagogy will be held at the King Edward Hotel, Toronto, Canada, December 28th, 29th and 30th, 1909.

The Institute is composed of dental teachers of the United States and Canada. An excellent program has been prepared, and matters of vital interest in the advancement of dental education and under discussion. Interesting and valuable teaching methods and appliances will be exhibited.

Dental teachers, examiners and ethical practitioners who are interested in the advancement of dental education are cordially invited.

Further particulars can be had from the chairman of the Executive Board, Dr. H. E. Friesell.

Dental Department, University of Pittsburgh,
Pittsburgh, Pa.

THE G. V. BLACK DENTAL CLUB CLINIC.

It is a pleasure to announce that the program is almost prepared for the Annual Clinic of the Club, which will be held in St. Paul on Feb. 24th and 25th, 1910.

The members of the Club will make operations on the first day of the clinic, while the second day's operations will be made by the members of other study clubs.

Essays will be read by Drs. Barnes of Seattle, Chappel of San Francisco, Friesell of Pittsburg, C. N. Johnson of Chicago, and C. E. Woodbury of Council Bluffs, Iowa.

Thursday evening Dr. G. V. Black of Chicago will deliver a lecture which will be illustrated.

The profession generally is invited to attend the meeting. The program for the clinic will be published later.

For further information, address,

R. B. WILSON, Secretary,
409-10 Am. Nat. Bank Bldg.,
St. Paul, Minn.

PERSONAL AND GENERAL

Fire.—The home of Dr. Martin, a dentist of Watseka, Ill., was completely destroyed October 21 by fire. The cause of the fire is unknown, and the loss is considerable.

Clark-Sonnstagen.—Dr. W. H. Clark, a very well known dentist of Mishicot, Wis., was married to Miss Alice Sonnstagen of Manitowoc, Wis., at the home of the latter, October 21.

Scalded by Bursting Vulcanizer.—Dr. Thomas H. Agnew, a prominent dentist of Medina, N. Y., was severely scalded about the face November 11 when a vulcanizer with which he was working suddenly exploded.

Defends Home Against Burglars.—Dr. Theodore Roosevelt, a dentist of Clarion, Iowa, shot and seriously wounded a burglar who was trying to enter his home November 1. The wounded man gave his name as C. Burns of Des Moines.

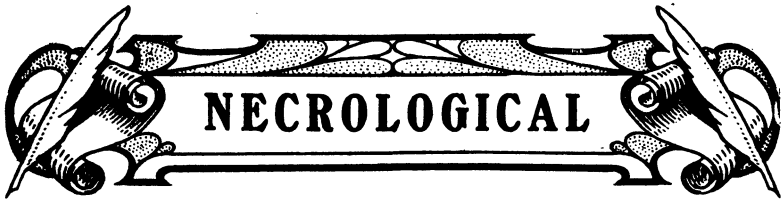
Hold Clinic in Penitentiary.—Because of the fact that many of the prisoners of the Kansas state penitentiary were suffering from toothache, the Central Missouri Dental Association, which was holding a meeting at Jefferson, Mo., held a clinic at the penitentiary and succeeded in doing quite a little dental work on the convicts.

Dentist Convicted.—As the result of a quarrel in which it is alleged he resorted to weapons other than those provided by nature, a dentist of Rockford, Ill., has been sentenced for a month's imprisonment. A friend of his who came to his aid in the melee, which was against two brothers of the same town, was also heavily fined.

Braunstein-Singer.—Miss Fannie Singer of Brownsville, N. Y., was so smitten with the gentle way in which Dr. Abraham G. Braunstein put gold into her teeth a year ago that she allowed him to place a loop of the same precious metal on her finger, November 14. Dr. Braunstein is of East New York, where he has many friends and a large practice.

Dentist Sues Fireworks Company.—Dr. J. D. Wirt of Frankfort, Ind., is the plaintiff in a suit before the supreme court in which he claims \$50,000 as damages for the death of his son from the Pain Fireworks Company. In a celebration, July 4, 1904, under the management of one of the employes of that company, his son was killed by the accidental discharge of a quantity of fireworks.

Guilshan-Conro.—Dr. J. J. Guilshan, a New York dentist, and Miss Belle Conro of that city were married November 12 at the home of the latter as the result of a very pretty romance. Miss Conro is a woman detective employed by the New York Dental Society, for the purpose of apprehending dentists who practice illegally and while investigating the validity of Dr. Guilshan's certificate not only found that his certificate was all right but that he himself was desirable as a friend.

A decorative banner with ornate scrollwork and floral patterns on either side. The word "NECROLOGICAL" is written in a bold, serif, all-caps font across the center of the banner.

NECROLOGICAL

Dr. I. J. Weatherbee, Groton, Mass., son of Isaac Weatherbee, the prominent ex-president of Boston Dental College, died as the result of an attack of appendicitis, Oct. 27. Dr. Weatherbee was educated in Tuft's College, Boston College, and demonstrated for nine years there after his graduation, when he went abroad, visiting Berlin and London, and had returned only a few weeks ago.

Dr. Francis M. Jones, a well-known dentist of Bethlehem, Pa., died in his home town of a sudden stroke of paralysis, Nov. 1.

Dr. L. L. Holt, a popular dentist of Philips, Me., was accidentally shot and killed, Nov. 24, by his nephew, who mistook him for a deer.

Dr. J. T. Younghusband, one of the oldest and best known dentists in Detroit, Mich., died at his home, Nov. 19, after a week's illness. He was born in Scotland, Canada, and has been a resident of Detroit for forty years, all of which time he has spent practicing dentistry.

Dr. A. L. Gilmer, of Antonito, Colo., where he has practiced for many years, died suddenly Nov. 16, as the result of despondency caused by the desertion of his wife and children. He was 45 years old and had practiced in many parts of Colorado, as well as in New Mexico, and was very well known and popular in his town.

Dr. Henry Jewett, one of the officials of the Atlanta Dental College, died suddenly of heart failure at his home in Atlanta, Ga., Nov. 10. Dr. Jewett was very prominent in dentistry in Florida, and had given much of his time and energy to the upbuilding of the college with which he was connected. He was 51 years old when he died.

Dr. V. E. Hayne, a prominent dentist of Abilene, Tex., died Nov. 9 as the result of the accidental discharge of a rifle in the hands of his three-year-old son. The child picked up a target rifle and before Dr. Hayne could warn him the rifle was discharged, wounding him in the arm, and soon later blood poison set in and lockjaw resulted.

Dr. R. E. Moon, a prominent lodge member of Mokense, Ill., died suddenly, Nov. 8, at the home of his mother at St. Charles, where he had gone last July to recuperate, after quitting his practice because of his poor health. He was 48 years old and was a member of the Masonic lodge, Modern Woodmen and Maccabees.

Dr. T. J. Jones, a well-known dentist of Washington, D. C., died suddenly at his home, Nov. 6. His death, due to heart failure, was utterly unexpected and resulted in the serious illness of his wife, as well as the astonishment and grief of his many friends in Washington, where he has lived and practiced for the last twenty-eight years. He was a graduate of the New York College of Pharmacy and the dental department of the National University.

Markwell-Runyan.—Nov. 7 Dr. L. H. Markwell, of Henderson, Ky., decided to devote three hours on his appointment book to a very serious purpose, and as a result of this is now very happily married to Miss Lottie Runyan, a charming young lady of Henshaw, Ky.

Removals.—Drs. L. L. Cramer, from Mengo, Ohio, to Steubenville, Ohio.—C. W. Pierce, from Appleton, Wis., to Fond du Lac, Wis.—W. J. Hostetter, from Omaha, Neb., to Defiance, Iowa.—J. H. Lovell, from Black Lick, Pa., to Bellwood, Pa.—R. W. Tench, from Buffalo, N. Y., to Franklinville, N. Y.—H. H. Hines, from Dayton, Ohio, to Cleveland, Ohio.—H. B. Wescott, from Kalona, Iowa, to Burlington, Iowa.—J. W. Phillips, retired.

Robberies.—Drs. C. E. Hart, loss \$60; M. J. Donahay, loss \$70; W. H. Johnson, loss \$40; J. W. Carter, loss \$100, Altoona, Pa.—C. C. McKennan, Russellville, Iowa, loss \$75.—N. R. Duffy, Altoona, Pa., loss \$40.—J. D. Dickson, Little Rock, Ark., loss \$50.—J. W. Stephans, loss \$15; Dr. Norsley, loss \$15, Dixon, Ill.—B. C. Moulton, Brooklyn, N. Y., loss \$500.—J. E. Hancock, Little Rock, Ark., loss \$6.—A. W. and H. A. McLaughlin, Youngstown, Ohio, loss \$30.—L. W. Evans, Youngstown, Ohio, loss \$5.—A. T. Izen, Youngstown, Ohio, loss \$10.—E. A. Flancher, Milwaukee, Wis., loss \$53.—J. E. Hess, Milwaukee, Wis., loss \$15.—R. S. Gallogly, Akron, Ohio, no loss given.—A. W. Jamison, Toledo, Ohio, no loss given.

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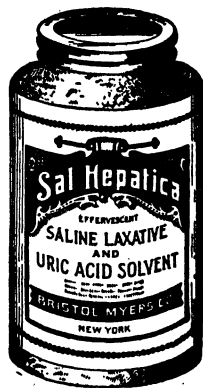
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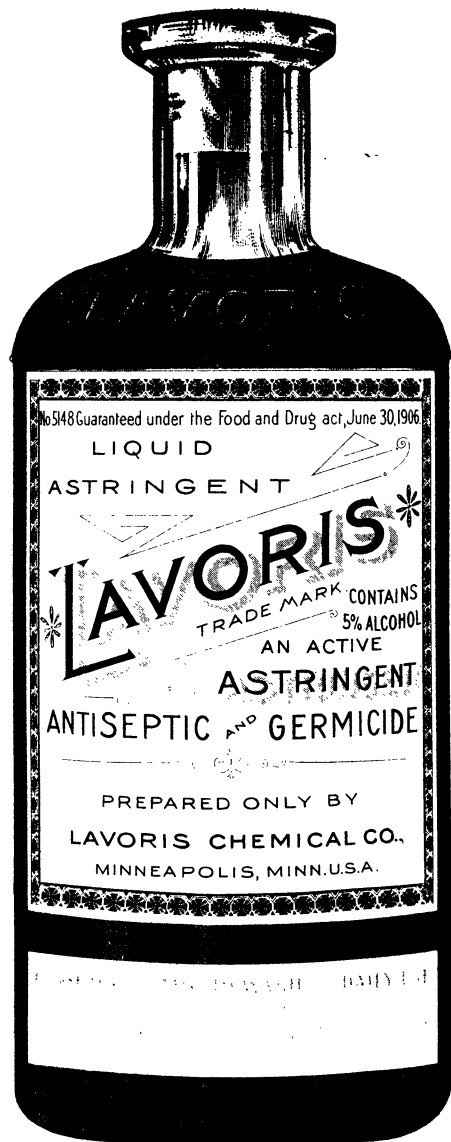
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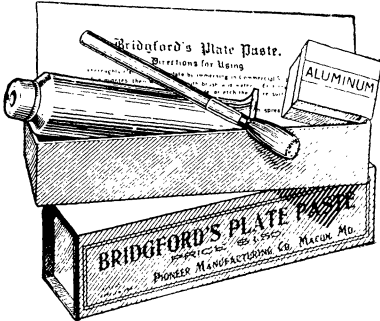
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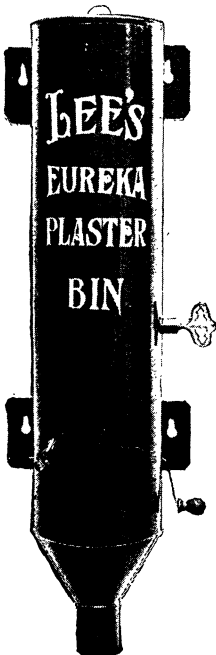
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EVERY Dentist in the world will receive a copy of this beautiful Calendar on January 1, 1910 and in the meantime we hope he will remember that "Antikamnia Tablets" and "Antikamnia & Codeine Tablets" are giving just the same excellent results that they have given for the past twenty years.

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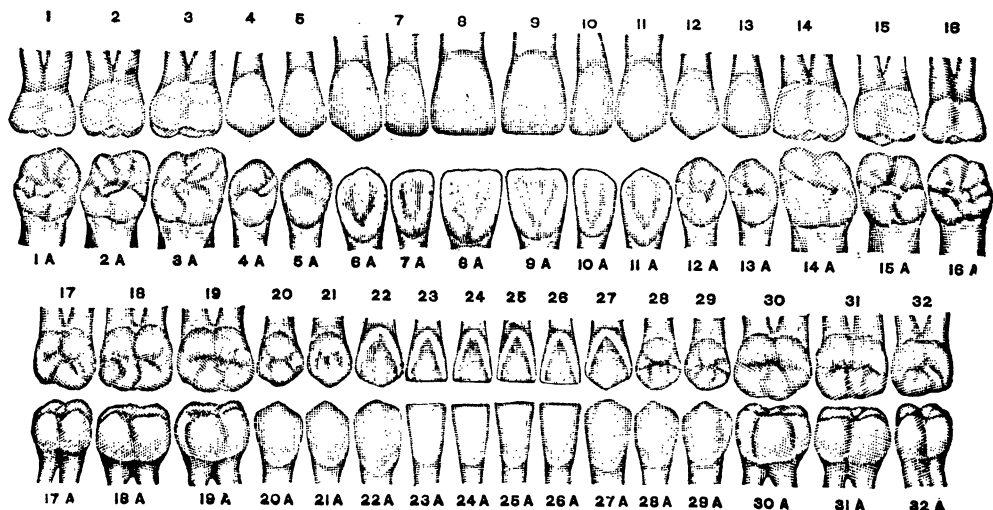
1 Ounce,	- - -	75 cts.	2 Ounces,	- - -	\$1.50
10 Ounces,	- - -			- - -	\$5.00

Manufactured only by

THE HISEY DENTAL MANUFACTURING CO.

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DATE	TOOTH	LOCATION	OPERATION	TIME	DR.	CR.	DATE
<p>RECORD CARD NO 3</p> <p>Suggested by Dr. Frank Ward Holt</p> <p>PRICE: Per 100 . . \$0.60 prepaid</p> <p>Per 500 . . 2.50 prepaid</p> <p>Per 1000 . . 4.50 prepaid</p> <p>Order from your dealer or from</p> <p>AMERICAN DENTAL JOURNAL</p> <p>Masonic Temple, Chicago</p>							

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Somnoform and Brugg's Anaesthesia Mixture

*will be mailed on request
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that you compare these analyses, duly **sworn** to,
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vertised as the **same formula**.

Brugg's Anaesthesia Mixture

is **proven** (under oath) by far more regular in size
of capsule and formula, and costs only **half the
price**.

Use the safest and incidentally save \$1.25 per package

World's Sole Agent

David B. Levy, 96 Warren St., New York

**If your dealer does not handle it—
There's a reason**

ARE YOU SATISFIED

With the Burs you are using? Do they cut keen and painless? Do they run true? Do the Right Angle Burs fit the Hand piece? Do they hold an edge well? We guarantee Beloit Burs to give satisfaction. Give us a trial order for one gross at \$7.50 per gross. Order today.

BELOIT BUR MFG. CO.

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1910 Borine Appointment Book

FREE

With American Dental Journal

Send \$1.00 to American Dental Journal and you will receive the Journal for one year, and the Borine Book as soon as ready

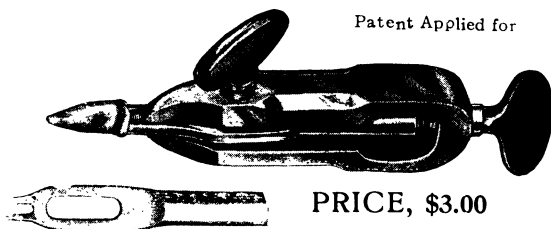
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TO REMOVE A PIN FROM A ROOT

Without the Use of the Drill
Without Injury to the Root
Without Pain to the Patient, Use a

LITTLE GIANT POST PULLER



Patent Applied for

PRICE, \$3.00

The slotted post, which bears on the end of the root, is braced with a bridge (see "A" in cut) so that it cannot spread, therefore there can be no strain tending to split the root. This instrument is made of the best tool steel money can buy.

For sale at all dental depots, or by

F. H. SKINNER, 72 E. Madison St., Chicago, Ill.

Chicago College of Dental Surgery

DENTAL DEPARTMENT VALPARAISO UNIVERSITY.

FOUNDED IN 1880

2420 GRADUATES

HAS CONTINUED UNDER THE MANAGEMENT OF ITS FOUNDERS SINCE ITS ORGANIZATION.

THE TWENTY-SIXTH ANNUAL COURSE OF INSTRUCTION WILL
BEGIN OCT. 7, 1907, ENDING ABOUT JUNE 1, 1908.

INSTRUCTION IS COMPLETE IN EVERY DETAIL.

THE CLINICAL MATERIAL IS ABUNDANT, WHILE THE COLLEGE BUILDING AND ITS
EQUIPMENT OFFER UNSURPASSED FACILITIES
TO THE DENTAL STUDENT.

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DR. TRUMAN W. BROPHY,

DEAN

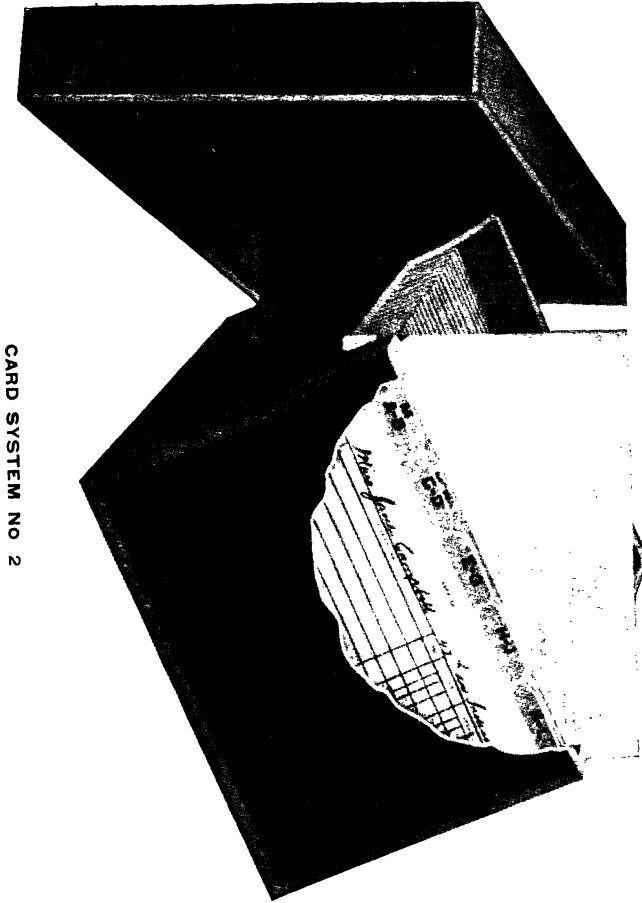
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FOR \$2.00 PREPAID



Contains 300 4x6 cards, cut of teeth on one side, ruled for accounts on the other. Two sets of indexes, different colors, and 10 cash cards. In heavy black cloth covered case. For cuts of cards and prices of extra cards see previous page. Size of case $6\frac{1}{2} \times 9\frac{1}{2}$ and $4\frac{3}{4}$ deep.

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GEO. W. WIEDHOFFT, D. D. S.

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That we are the leading dental laboratory firm of America ?

That our product is recognized by discriminating dentists as the Standard of excellence ?

That we enjoy a larger local patronage than all other Chicago laboratories combined?

There **MUST** be a Reason

Shall we send you Illustrated Catalogue
and Mailing Boxes ?



Chicago Dental Laboratory Company

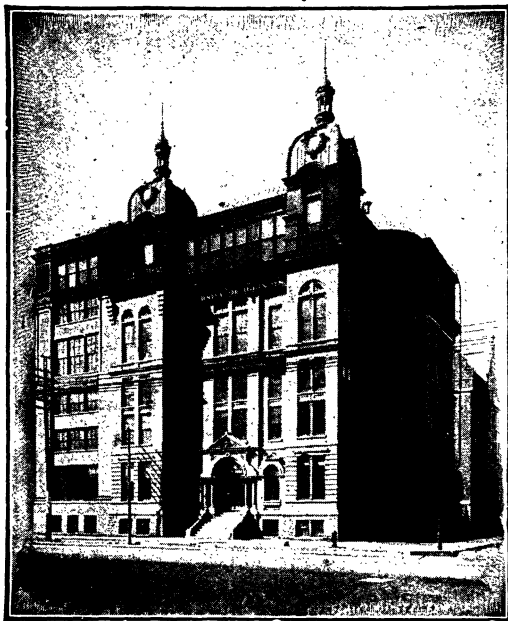
DRS. REESE & WIEDHOFFT

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College of Dentistry University of Illinois

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Recognized by National Association of Dental Examiners.

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A NEW DEPARTURE IN LOCAL ANESTHESIA

Local Anesthetic Tablets

(FORMULA OF DR. HERMANN PRINZ)

Novocain	1-3 gr.
Suprarenin Hydrochlorid, Synthetic	1-1200 gr.
Sodium Chlorid	1-8 gr.

One tablet dissolved in one C. c. (20 Minims) of distilled water makes a 2% isotonic novocain solution ready for immediate use.

Novocain is about seven times less poisonous than cocain; it does not interfere with the circulation, the respiration or the heart; nor does it produce irritation or sloughing of the tissues.

Synthetic Suprarenin Hydrochlorid is a permanent, staple compound artificially produced. On account of its chemical purity it produces uniform and definite results which are free from dangerous side-actions. It is not alone equal, but in certain respects superior to the organo-preparations obtained from the supra-renal capsule.

The **Novocain-Suprarenin** combination as represented by the above tablet is, according to present pharmacological knowledge, **the safest and most reliable means** for producing **Local Anesthesia**.

"Even if the danger of general narcosis is small under the very best conditions, the danger from local anesthesia is always less."

Literature:—A rational method of local anesthesia. (Dental Cosmos, September 1908 and Dental Era, November 1908.)

"Local Anesthesia" in Johnson's Text Book of Operative Dentistry, 1908.

PRICE TO THE PROFESSION

1 Tube, 25 Tablets	\$0.50
6 Tubes, each 25 Tablets	\$2.50

Write for a free sample

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...GENERAL DISTRIBUTOR...

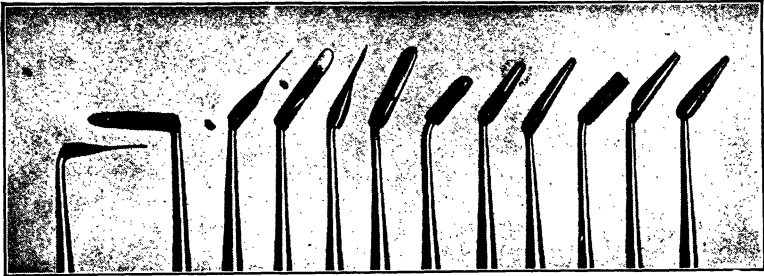
1000 Locust Street -:- St. Louis, Mo.

FOR SALE BY ALL FIRST CLASS DEALERS

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Stop!

And consider this money-saving proposition. We have a very useful set of twelve genuine Tortoise Shell Points, which can easily be mounted on old instruments with gum shellac. They are reinforced by having the metal go up into the point. They are stronger and of better shapes than anything of the kind on the market, and cost only \$3.00 the dozen.

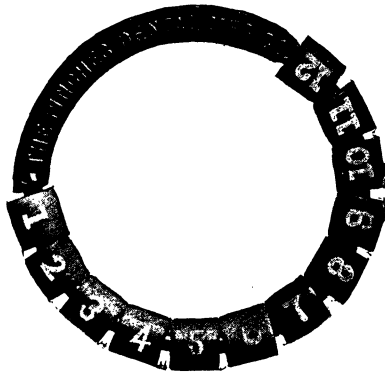


SUGGESTIONS FOR ANGLES IN MOUNTING POINTS

Our New Porcelain Shade Guide

should be in every dentist's office. The price of \$1.00 only covers actual cost

Accurate
Handsome
Indispensable



Convenient
Necessary
Cheap

Our Bone Spatulas, Celluloid Disks and Strips and other specialties are the finest made. Insist on them.

The Pinches Dental Mfg. Co.

1181 Broadway, New York

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Indiana Dental College

INDIANAPOLIS, INDIANA

A good school for dentistry in a good city for schools

A postal card inquiry will bring you information

Pyorrhea, Pulpless and Sensitive Teeth

USE

Dr. Veo's Remedy

SAVES TIME
SAVES TEETH
SAVES WORRY

SURE QUICK SAFE
Your Dental Dealer, \$2.00
CHARLES H. VEO, D. M. D.,
74 Boylston Street, Boston, Mass., U. S. A.

Northwestern University Dental School

The Course for Practitioners and Graduates

This course opens June 9, 1910, and on the first Thursday of each June following, and continues during four weeks, with six days of teaching and work. Each day will include two hours of lectures by the Professors and six hours of practical work by the Post-Graduates under the instruction and guidance of the Professors and Demonstrators of the School.

The studies for 1909 are:

Operative Dentistry—Prof. **G. V. BLACK**, assisted by Prof. A. D. Black and others.

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Oral Surgery—Professor GILMER and assistants.

Dental Pathology and Therapeutics—Professor MAWHINNEY.

Prosthetic Dentistry—Professor PROTHERO and assistants.

Orthodontia—Professor SELLERY.

Especial attention is given to PORCELAIN INLAYS, CAST and other GOLD INLAYS, crowns, bridge work of all kinds, the treatment of so-called PYORRHEA, and the most recent methods in Operative Dentistry, Oral Surgery and Orthodontia. Certificates are given to those who complete the course.

FEES.

Registration	\$ 5.00
Tuition for one subject.....	45.00
Tuition for two or three subjects.....	60.00
Tuition for entire course.....	70.00

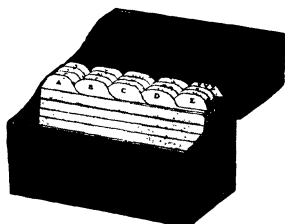
To graduates of Northwestern a reduction of twenty per cent will be made on tuition fee.

For further information, address Dr. C. R. E. KOCII, Secretary, Northwestern University Building, 87 Lake Street, Chicago.

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American Dental Card System No. 3

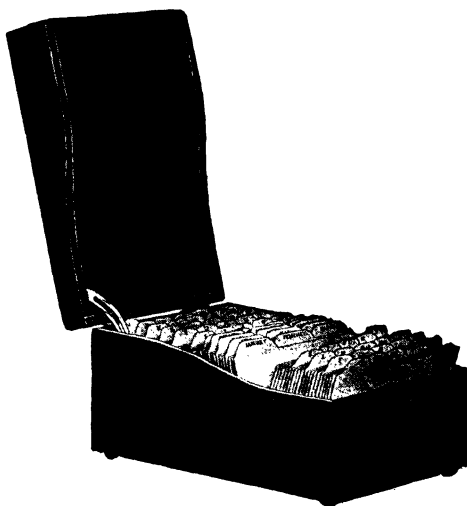
In handsome oak case with cover.



Contains 200 3 x 5 cards (see page 5). 1 set index cards.	\$1.50
Price prepaid.....	
Case only, prepaid.....	\$1 00
Extra cards, prepaid, per 100.....	.30
Extra indexes, prepaid, per set.....	.20

American Dental Card System No. 4

In handsome oak case with oak follow blocks and rubber feet.



13 inches long, to hold 1200 cards. Contains 300 4x6 cards (see page 5). 2 sets of index cards, different colors. 15 cash cards.	
Price.....	\$4.50
By express, prepaid.....	\$5.00
Extra cards, prepaid, per 100.....	.50
Extra index cards, prepaid, per set.....	.30
Cash cards, prepaid, per set of 15.....	.15
Case only.....	2.50
Case only, by express prepaid.....	3.00

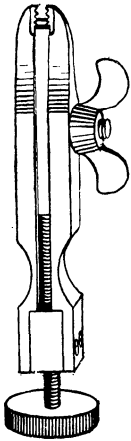
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The "Crown Pin Puller"



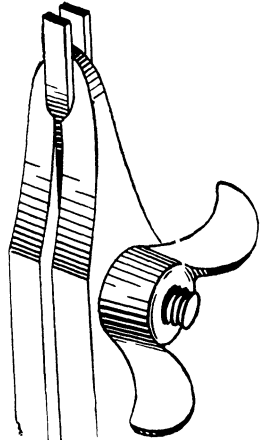
Two-thirds
actual size

The oldest and best Pin Pulling Vise on the market today, for the removal of pins or posts from the roots of teeth. They are made of the best quality instrument steel, and fully warranted to do the work for which they are manufactured.

Every dentist should have a "Crown Pin Puller" and realize the ease, comfort, and satisfaction with which the troublesome pins are removed.

PRICE \$3.00

**For sale by all Dental Depots
or by**



Enlarged section showing
position of posts after used

Dr. George T. Carpenter, Buchanan, Mich.

There is only ONE

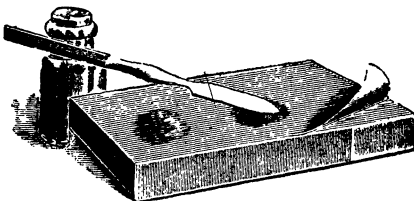
PAINLESS DEVITALIZER DEARBORN NERVE PASTE

Sold on a Money-Back Guarantee

HALL DENTAL SUPPLY CO., 34 Wabash Ave., Chicago

Spooner's Cement Pad

For mixing cement, and treatments; also porcelain, or any purpose for which you want a clean surface. Just throw away the glass slab, and use what will save you a lot of washing. Some



have said that the paper got in the cement. Well, they once said amalgam rotted the bones, and they broke their backs pounding in gold, and they pumped a foot engine. Try a pad for ten cents in stamps (only one sent) and judge for yourself.

**It is the New Way
and Cheap to Try**

SPOONER DENTAL CO., 1239 Bedford Ave., BROOKLYN, N. Y.

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Do You Know?

THAT you can inject Odontoline into the periodontal membrane and excavate sensitive dentine without one bit of pain.

THAT you can remove a healthy pulp and your patient will not flinch.

THAT you can extract teeth, any number

Absolutely Painless

THAT you can save time, bushels of it, and at the same time do more and better work. Sounds good, don't it? Well, it's true.

Sample oz., 25c 1 oz., 50c 5 ozs., \$2.00

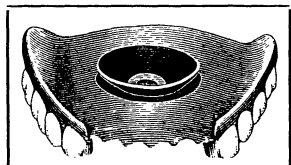
Louisville D. Laboratory & Mfg Co.

Box 686 LOUISVILLE, KY.

Indianapolis D. Supply Co.

Box 142 INDIANAPOLIS, IND.

NO CLASPS



You need no metal clasps when using the "EUREKA" goods on partial sets.

Note we do not change the name of our suction every year to create new business.

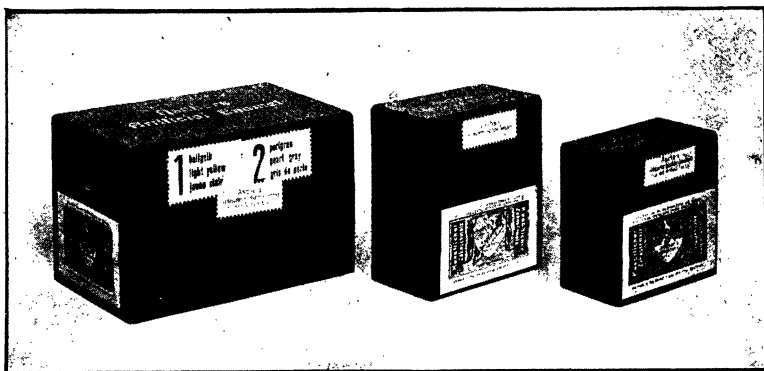
PRICE: \$2.00 per box Six Suctions

Send for Booklet

Sold Everywhere

EUREKA SUCTION CO., Loudonville, Ohio

Aschers Artificial Enamel



STYLE C

STYLE B

STYLE A

The Most Perfect Cement in the World

All first class dealers carry a full assortment in stock and will recommend no other. Insist on the original and only satisfactory silicate on the market.

The Pinches Dental Mfg. Co.

MAIN OFFICE

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New York City

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A TOOTH PRESERVER

BOHR INLAY METAL A PERFECT DENTAL CASTING METAL

¶The Bohr Inlay Metal is chemically united and similar to Gold in its usefulness. It is pure, silvery white, tasteless, durable, not brittle, takes a high polish and does not discolor in the mouth. ¶For crown and bridge work, cast inlays and restorations. ¶Cast the same as you are at present casting Gold.

Price, \$2.50 per Ounce Package

BOHR DENTAL SPECIALTY CO.
1317 MASONIC TEMPLE, CHICAGO, ILL.

The Personal Benefit

that has resulted from answering scores of *honest* ads that appealed to my needs, is far greater than I can measure in dollars. It was like wandering from darkness into light.

It is true there is an abundance of rot in dental ads, but you will loosen up your severity in judging my ads.

One reason the progressive dentist is now enjoying a larger list of the better class of patients—he is using two ads a week from my ad factory and **refused** all ads before he started my service.

My booklet, **What's Been Said Without Asking**, is waiting to get to your desk with a sample ad.

Dirty mouths will get to your office if you use a drag net made of a series of breezy letters.

H. BLFERS
DENTAL AD-WRITER
6801 Lucerne Ave., CLEVELAND
DESK "E"

Think of your name on a swell booklet—choice of five subjects.

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"Sample is O. K., Will Use CO-ARDA Hereafter"

EXPRESSIONS like this reach us almost daily. They come from leading practitioners in every state. To use a sample of Co-Arda is to appreciate its time-saving and worry-saving virtues and to wonder how you ever got along without it.

There is no longer the slightest need for trouble over abscessed teeth and root-canal fillings, for

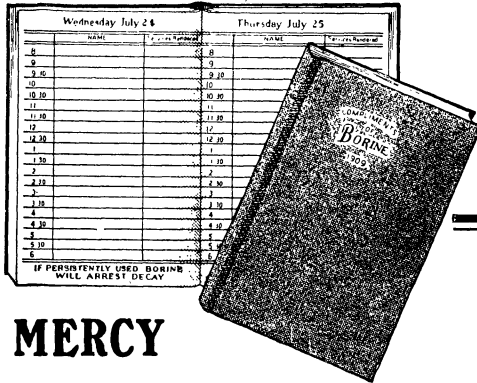
CO-ARDA

the combination abscess cure and root-canal filling, is guaranteed to give perfect and permanent satisfaction. It makes easy a branch of dentistry that otherwise is vexatious and time-wasting. With Co-Arda at hand you can put in a root-filling and know it will be right when you are ready to work and that it will stay right—no come-backs or dissatisfied patients.

The sales of Co-Arda couldn't have increased in the wonderful way they have increased during the last two years if these claims were not founded on the plain facts.

Every sample makes a friend. Have you had a sample? If not, let us send you one. Co-Arda is carried by all prominent dealers. Ask your dealer's salesman to show you Co-Arda the next time he comes around.

The Co-Arda Company
SCRANTON, PA.



ARE YOU AT THE MERCY OF YOUR MEMORY?

- ☞ Why cudgel your brain for a lost date or forgotten appointment?
- ☞ Keep a Borine Appointment Book on your desk and you can't forget or mislay any important information.
- ☞ It keeps your appointments, your memoranda, always at your fingers' ends. No hunts for lost scraps of paper, no trouble, no worry, no bother.

THE 1910 BORINE APPOINTMENT BOOK WILL SOON BE READY FOR DELIVERY

- ☞ It is as handsome as it is useful. Bound in a pebbled black cover, gold inlaid title. Contains 365 pages, a page for every day, conveniently ruled for every hour and half hour.
- ☞ As high in quality as every other article that emanates from the Borine House.
- ☞ Send \$1.00 for subscription to

American Dental Journal

4436 N. Winchester Ave
and get this book free.

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ALLWINE Perfection Swager

Extracts from Testimonials



"I feel your swaging outfit should be in use in every school."—Dr. Wm. J. Brady, Kansas City, Mo.

"No one about this office can understand how we ever got along without it."—Dr. C. F. Ladd, Lincoln, Neb.

"Dr. Allwine flowed a cast and swaged a plate in our presence in fifteen minutes. All we can say of it is good. We find it more rapid than anything we have used, it being equally successful with gold or aluminum."—Dr. J. H. Wallace, Omaha, Neb.

"No up-to-date office is complete without it. I would not part with it for many times its cost."—Dr. E. R. Stealy, Dunlap, Iowa.

"I can make an aluminum plate quicker and with less work and no greater cost than a rubber plate. It is a delight to make a metal plate with your swager."—Dr. A. T. Lockwood, Visalia, Cal.

"Your method is simple and the dental profession should be under lasting obligations to you for having perfected it."—Dr. J. E. Wait, Superior, Neb.

"Rubber Must Go"

the profession has long said, but this machine is the first to make this dictum possible, because an aluminum plate can be made as quickly, and easily, and (to the dentist) as cheaply as the rubber plate. **We prove it every day.**

It is quick, practical, easy of manipulation, and guaranteed against breakage—all of machined steel. Twenty tons pressure with one hundred pounds power.

Mark you, the cast plate will never supplant rubber. It takes too much time to reduce the price and popularize it. When the cast craze passes, the busy, practical man will turn to the swaged plate, and to the Allwine Perfection Swager and method. "To see it work is to want it."

If you are a busy man, do your own laboratory work, want to do metal work fast and well, and want to do yourself and patients a service write to the patentee and manufacturer,

H. W. ALLWINE, M. E., D. D. S.,

Northeast corner of Sixteenth and Douglas streets, Omaha, Neb.



M.

CR.

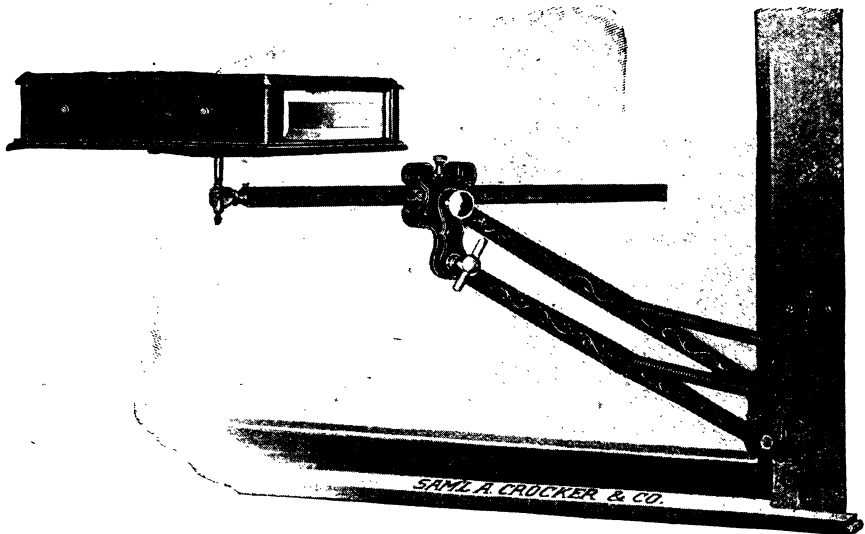
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4436 N. WINCHESTER AVE., CHICAGO

28

SAM'L A. CROCKER & CO'S CONE JOURNAL BOSS BRACKET

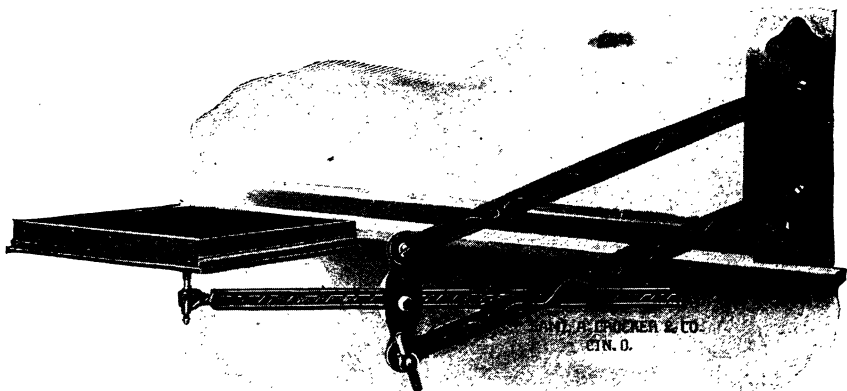
Smoothest to Operate, Easiest to Adjust to Different Positions, Noiseless, Will carry any Weight.



Prices, Less Table.

Cone Journal Boss Bracket—full Nickel Plated_ (Less Table).....	\$14 00
Cone Journal Boss Bracket—Japanned (all bright parts Nickel Plated).....	12 00
Cone Journal Boss Bracket—Copper Oxidized.....	15 00
Cone Journal Boss Bracket—Silver Oxidized, all bright parts Nickel Plated.....	18 00
Cone Journal Boss Bracket—White Enamel, all bright parts Nickel Plated.....	18 00

OUR STUDENT BRACKET IS A GREAT FAVORITE.



SAM'L A. CROCKER & CO'S STUDENT BRACKET

Made only in Japanned Finish, with all bright parts Nickel Plated. Fine Workmanship. Best Quality, Will carry any weight

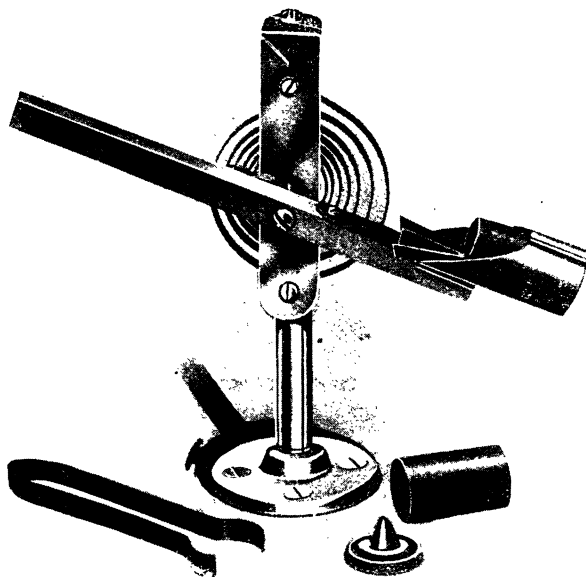
Price, Less Table.....	\$7 00
Allan Table, Oak or Walnut, with Plain Sides.....	6 00
Allan Table, Oak or Walnut, with Glass Mirror Sides.....	8 00
Small Table, 2 Drawers, Oak or Walnut.....	2 50

SAM'L A. CROCKER & CO.,

OHIO DENTAL AND SURGICAL DEPOT,

35, 37 and 39 West Fifth Street,

Cincinnati, O.



PATENTED

The Flannigan Centrifugal Machine

A SIMPLE ADAPTATION OF A PERFECT PRINCIPLE

Price, complete, \$12.00

Including two buckets, three melting trays,
sprue former, sprue wire and bucket tongs

It is generally conceded that the Centrifugal is the only perfect principle for casting. It requires no compressed air, has no leaky valves, requires no gas tank.

We guarantee this machine to cast small partial plates, bridge dummies, gold and Richmond crowns, and regulating appliance using gold, platinum alloy or silver.

Full directions with each machine.

Manufactured by

THE O'BRIEN WORTHEN CO.

Keokuk, Iowa

ST. LOUIS, Missouri

FOR SALE BY ALL DEALERS

By mentioning the AMERICAN DENTAL JOURNAL when writing to Advertisers you will confer a favor upon both the Advertiser and the Journal.

Quality, Price and Service

Our Gold Plate and Gold Solders are the favorites with Crown and Bridge Workers everywhere.

Their use increases the sum total of mechanical efficiency and makes every hour of the day more valuable to every busy dentist.

PRICE LIST

Gold Foll, 1/2 oz.....	\$ 3.25	23K Gold Plate, per dwt.....	\$1.08
Gold Foll, 1/2 oz.....	12.50	24K Gold Plate, per dwt.....	1.10
Gold Foll, per oz.....	25.00	Crown Metal, per dwt.....	1.40
Gold Cylinders, 1/2 oz.....	3.50	Clasp Metal, per dwt.....	1.00
Gold Cylinders, 1/2 oz.....	13.25	Clasp wire, per dwt.....	1.05
Gold Cylinders, per oz.....	26.50	18K Gold Wire, per dwt.....	.92
14K Solder, per dwt.....	.65	20K Gold Wire, per dwt.....	1.02
16K Solder, per dwt.....	.75	Platinum Sheet.....	Market Price
18K Solder, per dwt.....	.85	Platinum Foll, for Inlay Work.....	Market Price
20K Solder, per dwt.....	.95	Platinum Iridio Wire.....	Market Price
22K Solder, per dwt.....	1.00	Pure Silver.....	Market Price
Coin Solder.....	.95	Pure Zinc, per oz.....	.10
Silver Solder, per oz.....	.90	Pure Tin, per oz.....	.07
18K Gold Plate, per dwt.....	.85	Pure Copper, per oz.....	.05
20K Gold Plate, per dwt.....	.95	White Diamond Alloy, per oz....	1.50
22K Gold Plate, per dwt.....	1.05		
Coin Gold Plate, per dwt.....	1.02		

Unequaled mail order service. Large stock to select from. All orders filled as soon as they reach us—and back to you as fast as the mail or express can carry them. There is no delay at our end of the line.

WE PAY THE FOLLOWING CASH PRICES FOR SCRAP GOLD, PLATINUM, ETC.

	Per Dwt.		Per Dwt.
Gold Fillings.....	\$1.00	Gold Fillings.....	.60 to .75
Gold Scrap.....	.72 to .88	Scrap Platinum.....	Market Price

BENCH AND FLOOR SWEEPINGS REFINED

Thomas J. Dee & Co. Gold, Silver and Platinum Refiners

Main Office and Salesroom:
67-69 Washington Street

Smelting Works:
317 East Ontario Street

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HARVARD DENTAL FURNITURE

Has acquired distinction for beauty of design, convenience to the operator, comfort to the patient, simplicity and accuracy of mechanism, accessibility of working parts, quality of material and durability.

Chairs while adapted to the largest patient, stand alone in adaptation to children—important in view of movement in schools for dentistry of children. Cabinets convenient, engines with power, switchboards safe, and all artistic.

GARHART ALLOYS AND CEMENTS

approved by the most critical customer, the U. S. Government, for use in the Army. None better.



Chairs, Cabinets of wood, Cabinets of pressed steel, Tables, Brackets, Engines, Fountain Cuspidors, Laboratory Benches, Lathe Heads, Lathe Wheels, Electric Dental Engines, Laboratory Lathes, Switchboards, Air Compressors, Furnaces, Hot Air Syringes, Spray Bottle Warmers, Gold Annealers, Water Heaters, Sterilizers, Root Driers, Mouth Lamps, Garhart Alloys and Cements.

EASY MONTHLY PAYMENTS OR LIBERAL DISCOUNT FOR CASH

If you contemplate acquiring additional equipment, examine
HARVARD GOODS OR HARVARD ART CATALOGUE

The Harvard Company

Canton, Ohio, U. S. A.

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6th Floor Masonic Temple

PHILADELPHIA
1232 Race Street

NEW YORK
214 E. 23rd Street

BOSTON, 136 Boylston Street

LONDON

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"The Only Way"

Is the title of a little booklet just issued by us. Each word in it is most valuable and if you will follow same in every particular you will have no bleached or discolored fillings, and they will stay just where you place them, year after year.

Aschers Artificial Enamel

is just the same as ever, only this book tells you how to develop all its good points. If you wish to improve your practice you must first improve your method of working this wonderful material. Your dealer will send you one of these booklets shortly.

HOW TO MATCH TEETH

Is shown in this same book. We have worked out formulas showing just what proportions and numbers of enamel are required to match the teeth on all of the principal shade guides.

To assist you we have reduced the price of our shade guides to cost (75c) and with immediate orders will include measures and full directions for obtaining all those delicate tints. Write today.

The Pinches Dental Mfg. Co.

1181 Broadway, NEW YORK

THE STANDARD OF QUALITY

We have devoted our entire attention to the manufacturing of Gold Fillings since 1820. We make nothing else.

OUR SPECIALTY

Extra Pliable Burnish Gold Cylinders 1-oz. \$34; $\frac{1}{16}$ -oz. \$2.25

Pure Gold Cylinders
Fine Gold Foil
Pure Gold Ropes

} 1-oz. \$27.00. $\frac{1}{8}$ -oz. \$3.50

"M. & H." MAT GOLD

A new and improved product. Forms—Mat and Strip

1-oz. \$32.00 $\frac{1}{2}$ -oz. \$16.00 $\frac{1}{8}$ -oz. \$4.25 $\frac{1}{16}$ -oz. \$2.15

Order direct if not obtainable from your dealer.

MORGAN, HASTINGS & CO.

819-821 Filbert Street

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"Not Failure But Low Aim Is Crime."

Every Dentist should aim to attain the highest knowledge and skill in his profession. Triolin will help you to the highest degree of professional skill in the treatment of Abscessed Teeth and foul Root Canals, and your labor will be a success in every case. No up-to-date Dentist can afford to be without TRIOLIN. Price, \$1.00 per package.

J. A. WILLIAMS. D. D. S.
Fort Wayne, Indiana.

NUVO TEETH

Continue to give satisfaction to a wider and wider circle of users. Are you one of them?

Their great strength, life-like appearance and absence of pin shadows are some of the GOOD points noted by those who use them.

Look for the White Back

Manufactured by

Dental Protective Supply Co.

A Complete Stock carried by the

C. L. Frame Dental Supply Co.

1301 MASONIC TEMPLE

CHICAGO, ILL.

Our NEW FOLDING CHAIR

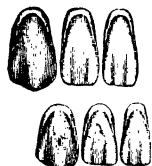
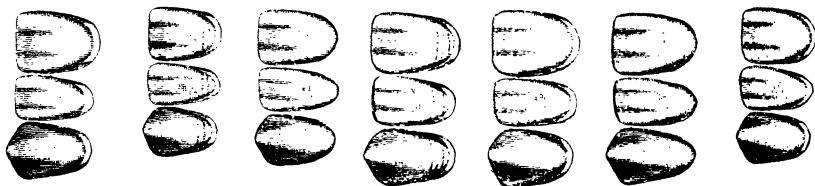


Folds to smallest possible size and can be carried under the arm. Is handsomely finished, strong, durable, light, weighs only 26 pounds, and is

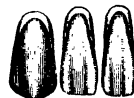
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With Cuspidor and Holder, \$13.50

AMERICAN DENTAL CO., Chicago
RAVENSWOOD

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Ravenswood Teeth



A trial will convince
you of the superior-
ity of these teeth.

Made especially for us by
one of the largest tooth
factories in the world.

Price, Single Sets, 60 cts.

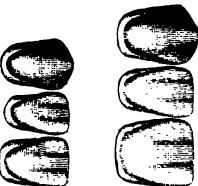
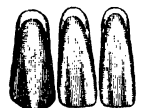
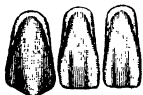
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Send 60 cts. in stamps for
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American Dental Co.

Ravenswood, Chicago





High Grade Work and Prompt Service

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**The Largest and Best Dental
Laboratory in the World**

A TRIAL
is All We Ask to
Prove our Efficiency
Write for Catalogue

**ATLAS
DENTAL LABORATORY CO.**

35-37 Randolph Street
CHICAGO, ILL.

“THE BEST”
is none too good for you

WE MAKE THEM

Neatness in the office
brings patients.

**WEAR
OUR
COATS**

and get the business

SEND POSTAL FOR SAMPLES

OFFICE COAT COMPANY
254 East Madison Street, Chicago, Ill.

Successors to LONGNECKER EVANS & CO.



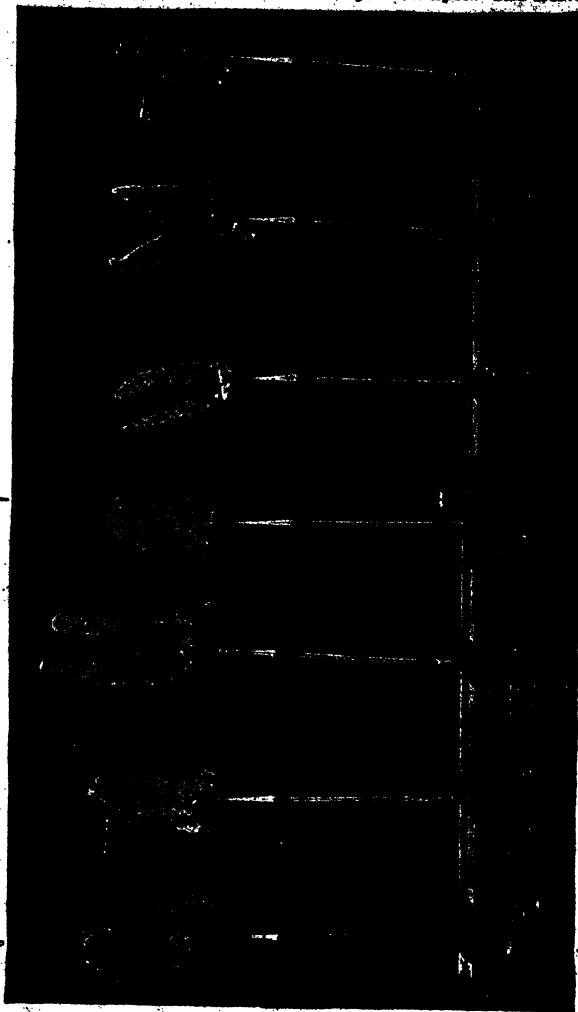
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THE ONLY LOCAL ANTISEPTIC ANESTHETIC FOR PAINLESS
EXTRACTION OF TEETH, AND ALL MINOR SURGICAL OPERATIONS
Upon receipt of six cents will forward you samples and literature.

Impacted Wisdom extracted for Mrs. Dr. Heather, of Chicago
Note how I had to cut away the Medio Occlusal aspect.

Note the tes tong shape

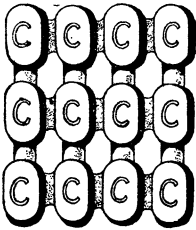
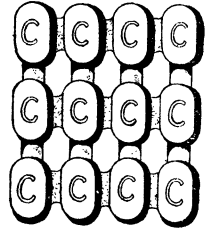
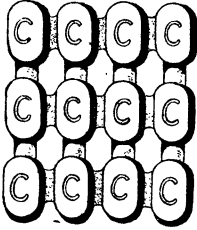


Extracted for Dr. O. W. Green, M. D., by Dr. Lelan Odis Green,
Chicago. Acestoria being employed.

Impacted Wisdom.

If you cannot procure Acestoria from your dental depot, order direct from

**DR. L. O. GREEN, HEYWORTH BLDG.
CHICAGO, ILL.**



A substitute for gold in cast work.

White, colorless, tasteless, strong, durable.

May be cast directly on porcelain teeth.

The result of thousands of experiments.

Used with any apparatus.

Takes high polish.

Will not discolor in the mouth.

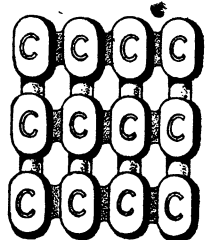
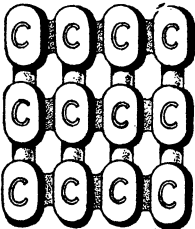
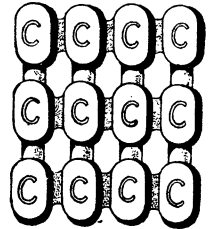
Per ounce \$2.00.

Send 50 cents in stamps for $\frac{1}{4}$ ounce sample to

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